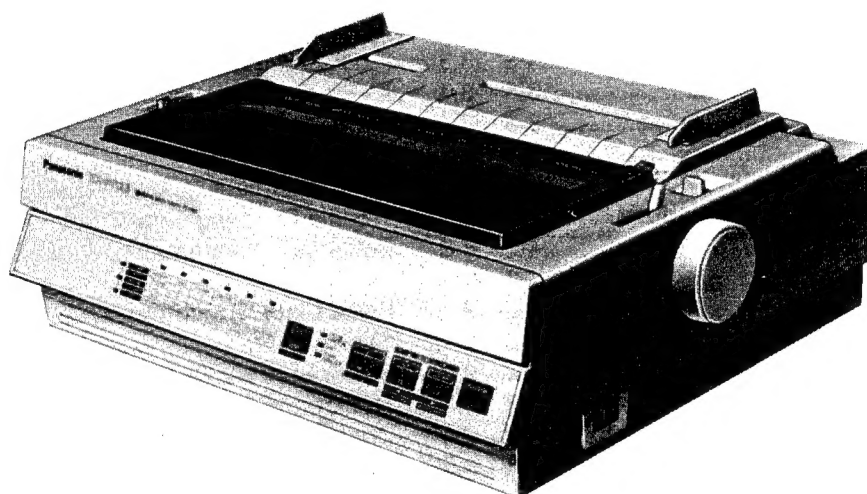


ORDER NO. KM69010343C2

Service Manual

Printer
KX-P1123



Panasonic

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

TABLE OF CONTENTS

1. Specifications	1-1	8. Electronic Circuit Descriptions	8-1
2. Operator Controls/Indicators	2-1	8.1 Principle of Operation	8-1
3. Settings of Controls	3-1	8.2 Circuitry	8-1
3.1 Print Mode.....	3-1	8.2.1 Power Supply Block	8-1
3.1.1 Micro Line Feed	3-1	8.2.2 CPU, Gate Array and Peripheral Circuit Block.....	8-4
3.1.2 Memo Load	3-1	8.2.3 Parallel Interface Circuit.....	8-9
3.1.3 Self Test Print.....	3-1	8.2.4 Carriage Motor Drive Block.....	8-10
3.1.4 Hex.Dump Print.....	3-1	8.2.5 Paper Feed Motor Drive Block.....	8-11
3.2 Function Mode	3-2	8.2.6 Head Drive Block	8-12
3.2.1 Function Chart	3-2	8.2.7 Sensor and Switch Circuits	8-14
3.2.2 Printing Margin	3-2	8.2.8 Control Panel	8-15
3.2.3 Factory Mode	3-2	8.2.9 Logic Board Connection Diagram	8-16
3.2.4 Macro Memory	3-3	8.3 Explanation of Connectors	8-17
3.2.5 Perforation Cut	3-3	8.3.1 Name of Connectors	8-17
3.2.6 Top of the Form.....	3-3	8.3.2 Pin Assignment	8-17
3.3 Initial Set Up Mode.....	3-4	8.4 IC Pin Configuration.....	8-20
4. Removal and Replacement Procedure	4-1	8.4.1 Logic Symbol Chart.....	8-20
4.1 Covers.....	4-1	8.4.2 Pin Configuration	8-20
4.2 Printing Mechanism	4-1	8.4.3 Pin Assignment.....	8-21
4.3 Main Board.....	4-2	8.5 Trouble Shooting Flow Chart	8-24
4.4 Power Transformer and Power Supply	4-2	8.6 Schematic Diagram.....	8-32
4.5 Printhead.....	4-2	9. Parts List Lubrication	9-1
4.6 Carriage Assembly.....	4-3	9.1 Cabinet.....	9-1
4.7 Platen Assembly	4-3	9.2 Power Supply	9-3
4.8 Tractor Assembly	4-3	9.3 Tractor and Carriage	9-4
5. Adjustment	5-1	9.4 Chassis	9-6
5.1 Head Gap.....	5-1	9.5 Main Board.....	9-9
5.2 Print Timing.....	5-2	9.6 Control Panel	9-14
6. Mechanical Function	6-1	9.7 Sensors and Head Relay Terminal	9-15
6.1 Carriage Drive System.....	6-1		
6.1.1 Power Transmission Mechanism	6-1		
6.1.2 Print Timing.....	6-1		
6.1.3 Home Position Detector Mechanism.....	6-1		
6.1.4 Ink Ribbon Cassette Drive Mechanism.....	6-2		
6.2 Paper Thickness Selection	6-2		
6.3 Printhead.....	6-3		
6.3.1 Power Transmission Mechanism	6-3		
6.3.2 Printhead Pin Operation.....	6-3		
6.4 Paper Feed Mechanism.....	6-3		
6.4.1 Power Transmission Mechanism	6-3		
6.4.2 Paper Feed Mode	6-4		
6.5 End of Paper Detectors.....	6-5		
6.6 Paper Load	6-5		
7. Electronic Circuit Block Diagram	7-1		

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1. Specifications

Power requirements: AC220V/50Hz, AC240V/50Hz
 Current: Idle: 0.1A ; Maximum 1.5A
 Print mode: Draft, Letter Quality (Courier, Prestige, Bold PS, Script), Dot Graphics
 Character sets: 96ASCII characters, 96 Italic ASCII characters, 32 International Characters (13 countries), 32 Italic International characters (13 countries). 158 IBM Special characters sets 1&2
 Dot configuration: Dot Diameter: 1/127 inch (0.2 mm)

		Draft (PICA)	LQ
Dot Alignment (H x V)		9x24	30x24
Dot Pitch	(H)	1/120"	1/360"
	(V)	1/180"	1/180"

Character size
 Nomal characters: 0.074(W) x 0.097(H) inch (1.89 x 2.46 mm)

Character per line (cpl)
 (per inch (25.4 mm) (cpi)):

	Draft, LQ	Elongated
Pica	80 cpl (10cpi)	40 cpl (5cpi)
Elite	96 cpl (12cpi)	48 cpl (6cpi)
Micron	120 cpl (15cpi)	60 cpl (7.5cpi)
Compressed	137 cpl (17cpi)	68 cpl (8.5cpi)
Elite compressed	160 cpl (20cpi)	80 cpl (10cpi)

Print speed:

	Micron	Elite	Pica
Draft	240 cps	192 cps	160 cps
LQ	53 cps	63 cps	53 cps

Print direction:

User selectable
 Bidirectional or Unidirectional

New line time:

Approx. 100 msec [with 1/6 inch (4.2 mm) line feeding]

Paper feed:

Friction and Push/Pull Tractor

Paper used:

	Width	Weight	Height
Fanfold paper	4-10 in (102-254mm)	16-24lbs (When Push) 16-24lbs (When Pull)
Single sheet	4-11.7 in (102-297mm)	14-24 lbs.	5-14.3 in (127-363mm)

Paper thickness:

Total thickness of sheets must be less than 0.013 inch (0.32 mm).

Number of copies:

Original plus three non-carbon copies

Storage environment

Temperature:

-4°F to 140°F (-20 °C to + 60 °C)

Humidity:

10-90%RHO

Operating environment:

50°F to 95°F (+10 °C to + 35 °C)

30-80%RHO

Head service life:

100 milion character (Draft mode)

Ribbon:

Specially designed cassette seamless fabric ribbon

Service life: Approximately 3 milion characters (Draft Mode)

Dimensions:

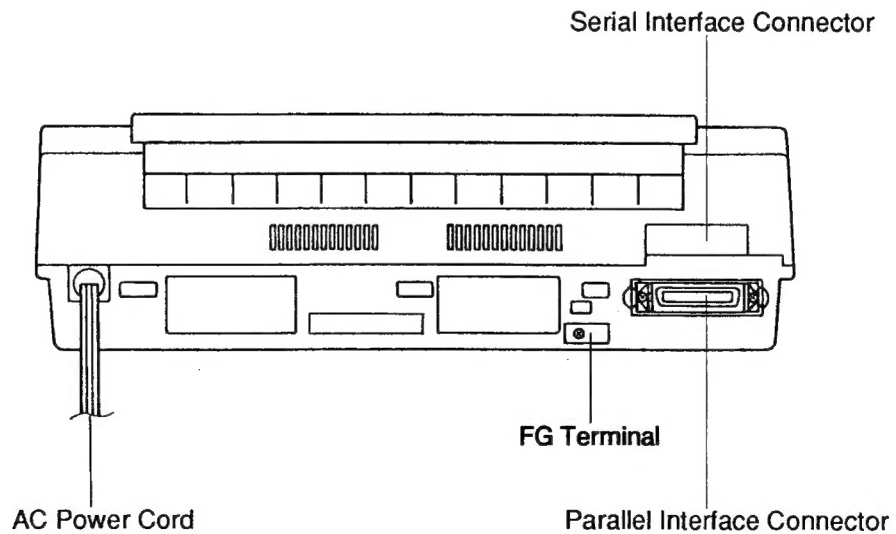
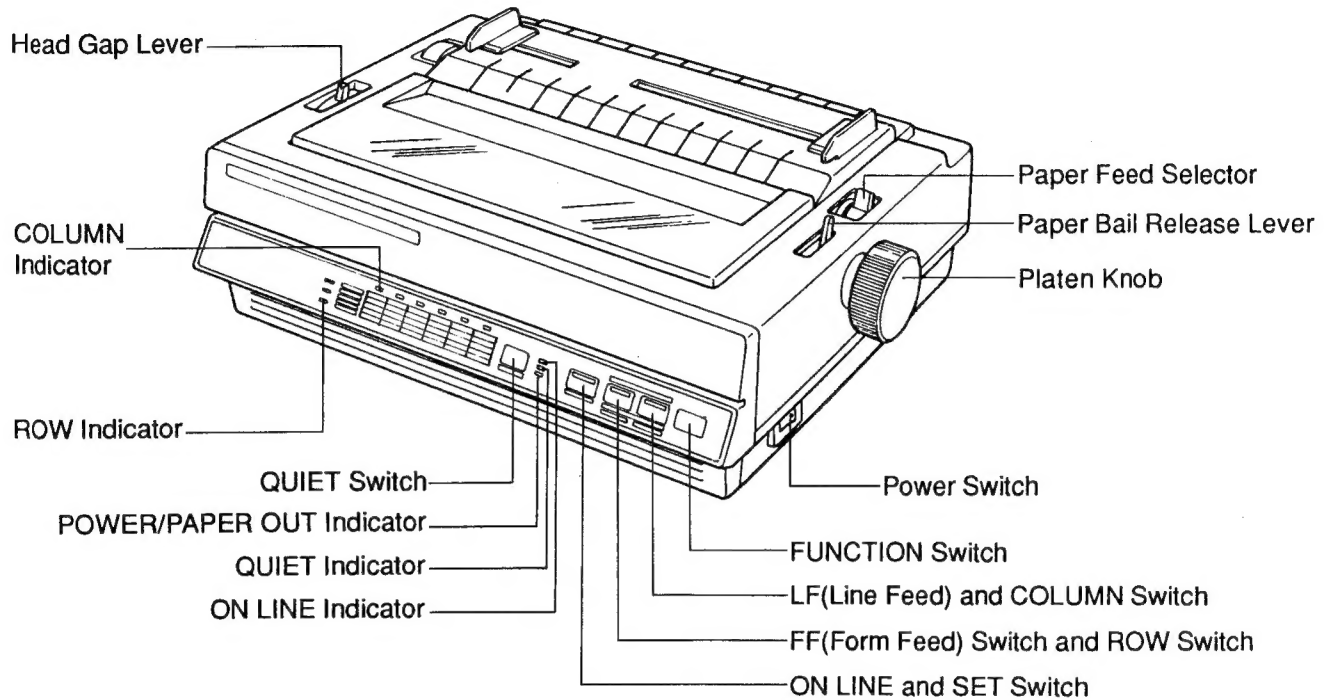
16.7 (W) x 13.4 (D) x 5.2 (H) in. (423 x 341 x 133 mm)

Weight:

Approx. 15.7 lbs. (7.1 kg)

Specifications are subject to change without notice.

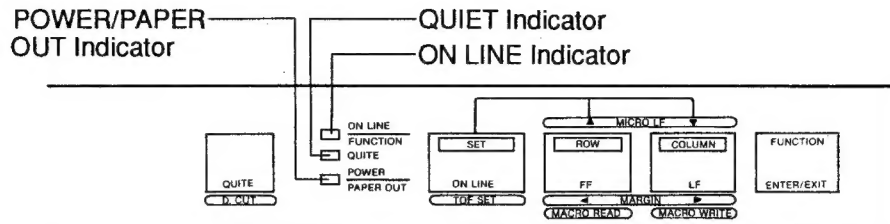
2. Operator Controls/Indicators



3. Setting of Controls

This section covers the basic operation of the printer. For more detailed operation, refer to the operator's manual.

3.1 Print Mode



- FUNCTION switch:** This switch changes printer operation between the print mode and the function mode, as indicated by the ON LINE indicator. When the indicator is lit continuously the print mode is selected, and when the indicator is blinking the function mode is selected.
- Line Feed (LF) switch:** This switch advances paper one line at a time.
- Form Feed (FF) switch:** This switch advances paper to the top of the next page.
- ON LINE switch:** This switch changes the printer operation between on line or off line, as indicated by the ON LINE indicator. When the indicator is lit continuously, the printer is on line.
- QUIET switch:** This switch lowers printing noise, by performing the even and odd pins printing operation. When the quiet mode is selected, the QUIET indicator is lit.

3.1.1 Micro Line Feed

Micro line feed is used to move the paper in increments of 1/180 inch. It is performed by holding the ON LINE switch and simultaneously pressing the LF or FF switch. In this mode, the LF switch backs up paper, and the FF switch advances the paper.

3.1.2 Memo Load

The memo load function enables printing on single sheets of paper or envelopes without removing continuous paper. The operating procedure is explained below:

1. Tear off the continuous paper at the perforation.
2. Pull the paper bail lever. The carriage moves to the center of the paper, and continuous paper automatically moves back to the tractor feeder.
3. Position the paper feed selector to "F".
4. Load a single sheet of paper or envelopes by pulling the paper bail lever.
5. After printing is completed, press the FF switch to remove the page, and then reposition the paper feed selector to "T".

Note: Memo load only functions correctly when the paper feed selector is the "T" position.

3.1.3 Self Test Print

Self test is accessed by holding the LF switch while turning on the printer. First, the ASC II characters of the internal fonts are printed. Next DRAFT print continues for a while. To exit self test, turn off the printer.

3.1.4 Hex. Dump Print

Hex dump is accessed by holding both the LF and FF switches while turning on the printer. Data received from the computer will be printed in hexadecimal form. To exit hex dump, turn off the printer.

3.2 Function Mode

The function mode is selected by pressing the FUNCTION switch. The ON LINE indicator blinks when in the function mode.

The following functions are selected by using the ROW and COLUMN switches.

After the function is selected, the SET switch enters the function. The COLUMN indicator blinks to show the position of the function. If SET is pressed, the column indicator will light up continuously.

3.2.1 Function Chart

FUNCTION	ROW	COLUMN					
		<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Font	<div>ON</div> <div></div> <div></div>	PROGRAM	Draft	Courier	Prestige	Bold PS	Script
	<div>ON</div> <div>ON</div> <div></div>	PROGRAM	10 cpi	12 cpi	15 cpi	17 cpi	PS
	<div></div> <div>ON</div> <div></div>	11inch	12inch	14inch	8inch	8.5inch	112/3 inch
Enhancement	<div></div> <div>ON</div> <div>ON</div>	Bold	Italic	Double Height	Double Width	Double Strike	Centering
	<div></div> <div></div> <div>ON</div>	Left Margin	Right Margin	Macro#1	Macro#2	Macro#3	Factory
	<div>ON</div> <div>ON</div> <div>ON</div>	Present mode can be printed on the paper by pressing the SET switch.					

Note: The PGM(Program) mode allows software commands to be sent to the printer. PS (Proportional Spacing) and draft mode cannot be simultaneously selected. If selected together, the buzzer sounds indicating a mismatch.

3.2.2 Printing Margin

The left and right margin can be set to the desired positions by the following procedure in the function mode:

1. Select the left (right) margin mode by using the ROW and COLUMN switches.
2. Press the SET switch to enter the left (right) margin set mode.
3. Move the carriage to the desired position by using FF or LF switches.
4. Set the left (right) margin into the memory by pressing the SET switch.

Note: When printer enter to left (right) margin set mode, the COLUMN indicator change from blinking to lighting.
The margin can also be set through software commands.

3.2.3 Factory Mode

This function is used to set the initial status inputted at factory by following procedures:

1. Select the factory mode by using the ROW and COLUMN switches.
2. Press the SET switch to enter the Factory mode.

3.2.4 Macro Memory

Macro memory functions #1, #2 and #3 are used to store a combination of font, pitch, page length, LPI and margin modes into the permanent internal memory by performing Macro write. When the printer is first turned on, Macro #1 is automatically selected. Macro #2 and macro #3 must be selected through the function operation.

Macro Write

The macro write function is used to store the mode data into the memory by the following procedures:

1. Set the desired modes as explained in the function mode selection.
2. Select the Macro #1, #2 or #3 by using the ROW and COLUMN switches.
3. Press the SET switch to enter the Macro Write mode.
4. Press the MACRO WRITE(LF) switch and then press the SET switch.

Macro Read

The macro read function is used to Load the mode data as stored in memory by the following procedure:

1. Select the desired macro by using the ROW and COLUMN switches.
2. Select the Macro #1, #2 or #3 by using the ROW and COLUMN switches.
3. Press the SET switch to enter the Macro Read mode.
4. Press the MACRO READ(FF) switch and then press the SET switch.

3.2.5 Perforation Cut

This function allows tearing continuous paper off at the perforation. When pressed once, the paper advances above the plastic cover for easy paper separation. If SET, ON LINE or FUNCTION is then pressed, the paper moves back to the previous position.

3.2.6 Top of the Form

Top of the form function is used to set the top margin the paper. It automatically loads the paper to the desired position. This function can perform three different top margins of the paper for continuous paper, single sheet paper and single sheet paper fed by the cut sheet feeder. The operating procedure is explained below:

1. Insert the paper by pulling the paper bail lever.
2. Adjust the paper position by using the line feed, micro line feed or reverse micro line feed. (Do not use the platen knob for adjustment.)
3. Press the FUNCTION switch and then ON LINE switch.

3.3 Initial Set Up Mode

The initial set up mode is entered by holding the FUNCTION switch while turning on the printer.
The ON LINE indicator blinks signifying the initial set up mode is selected.

The following function in a 12 row by 6 column grid are selected by using the ROW and COLUMN switches.

The SET switch is used to enter the function. After selecting the first 6 rows, pressing the ROW switch causes the ROW indicator to blink, indicating setting of the bottom set of functions.

The blinking COLUMN indicator tells the position of the function selected. It stops blinking after pressing the SET switch.

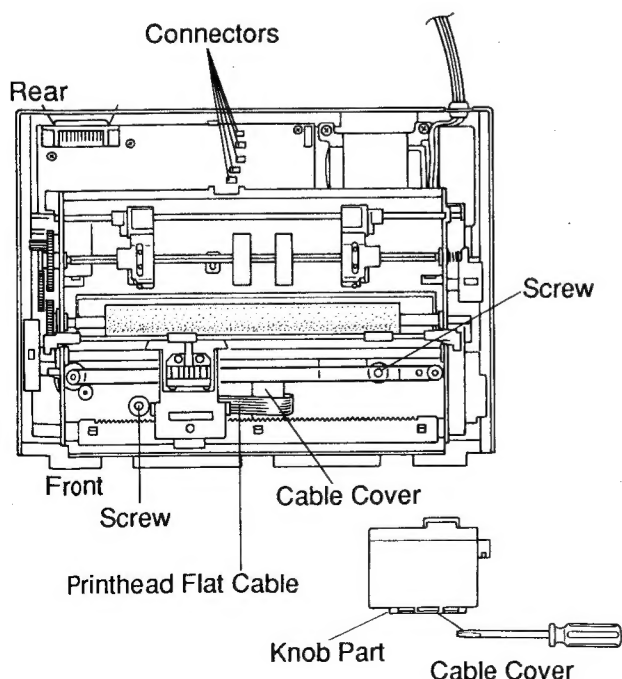
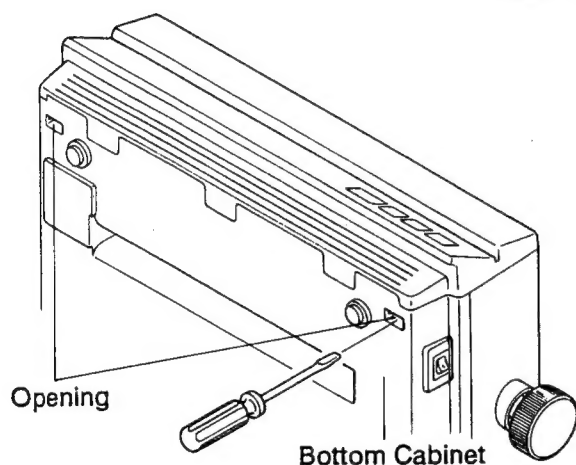
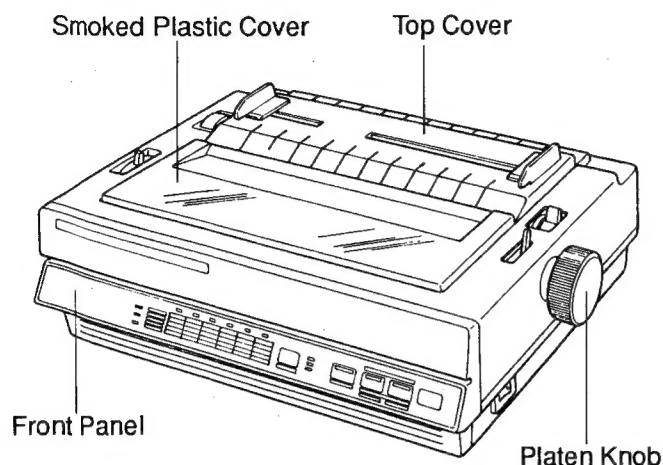
Initial status inputted at factory can be set by pressing the MACRO READ (FF) switch and then press the SET switch.

FUNCTION	ROW	COLUMN					
Print Mode Check	<div>ON</div>	Present mode can be printed on the paper by pressing the SET switch.					
	<div>ON</div>						
	<div>ON</div>						
Emulation	<div>ON</div>	LQ-850 (EPSON) ITALIC	LQ-850 (EPSON) GRAPHIC	IBM G1	IBMG2	—	—
	<div></div>						
	<div></div>						
Default Font	<div>ON</div>	Draft	Courier	Prestige	Bold PS	Script	—
	<div>ON</div>						
	<div></div>						
International Character Set	<div></div>	U.S.A.	France	Germany	England	Denmark 1	Sweden
	<div>ON</div>						
	<div></div>						
	<div></div>	Italy	Spain 1	Japan	Norway	Denmark 2	Spain 2
	<div>ON</div>						
	<div>ON</div>						
<div></div>	Latin America	Legal	—	—	—	—	
<div></div>							
<div>ON</div>							
Print Mode Check	<div>BLK</div>	Present mode can be printed on the paper by pressing the SET switch.					
	<div>BLK</div>						
	<div>BLK</div>						
Serial Interface Baud Rate	<div>BLK</div>	Download Buffer (with 32K RAM)	Cut Sheet Feeder	Buzzer ON	Zero Slash OFF	Alternate Graphic Mode ON	Data Length ON=7 bit OFF=8 bit
	<div></div>						
	<div></div>						
	<div>BLK</div>	—	Print Direction	Skip Perforation	Auto LF	Auto CR	P.O Detect ON
	<div>BLK</div>						
	<div></div>						
*	<div></div>	150	300	600	1200	2400	4800
Protocol	<div></div>	9600	—	No Parity	Ignore Parity	ODD Parity	EVEN Parity
	<div>BLK</div>						
	<div>BLK</div>						
*	<div></div>	Protocol ON=XON/X OFF=DTR	Suspend D.T. ON=128byte OFF=512byte	Resume D.T. ON=SDT+128byte OFF=SDT+256byte	S.Polarity ON=Space OFF=Mark	—	—

Note: The bottom 3 functions (*) are functional only with the interface board KX-PS10 option.

4. Removal and Replacement Procedures

For safety and to avoid possible damage to electronic components, the AC line cord must be unplugged before disassembly.



4.1 Covers

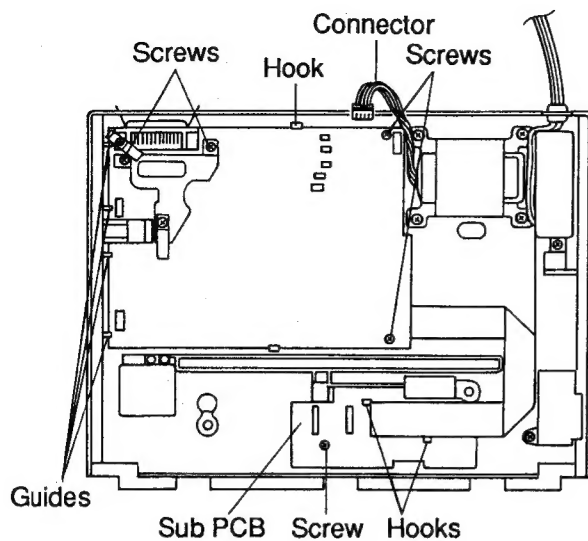
1. Remove the smoked plastic cover and the top cover.
2. Remove the platen knob.
3. Remove the upper cabinet by following procedure.
4. Raise the unit and insert a screwdriver into the bottom openings. Pry the screwdriver to release the hooks, and then separate the upper cabinet from the bottom cabinet.
5. Remove the front panel by releasing the connector cable.

4.2 Printing Mechanism

1. Unplug the sensor connectors (CN5, CN6, CN7, CN8, CN9).
2. Position the carriage on left side and unplug the print head flat cable from the connector by removing the cable cover.

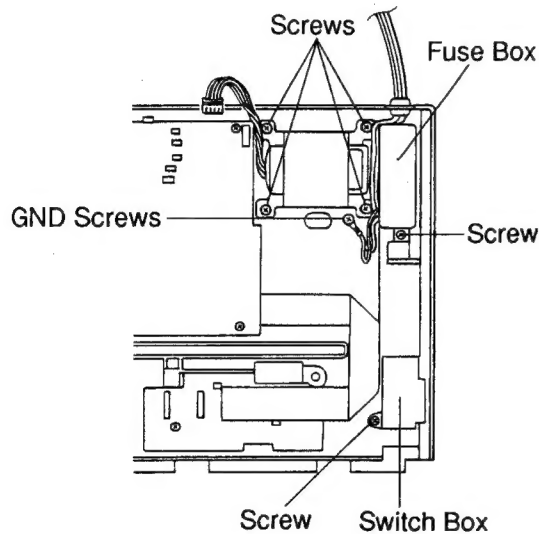
Note: To remove the cable, first pry the cable cover off with a screwdriver. Be careful not to damage the cable.

3. Remove the screws (2) from the chassis.
4. Raise the front of the chassis and release the chassis rear hook then unplug the motor connectors (CN10, CN11).
5. Lift off the printing mechanism.



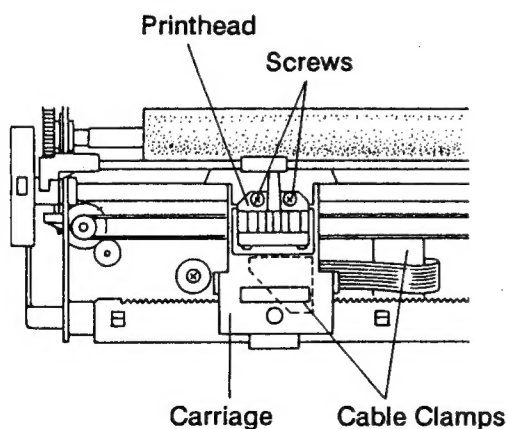
4.3 Main Board

1. Unplug the connector (CN1) on main PCB.
2. Remove the screw on sub PCB and remove the sub PCB by releasing 2 hooks.
3. Remove the screw (4) from the main PCB.
4. Release the hook with little raising the main PCB end at transformer side and little slide the main PCB to transformer side then remove the main PCB.



4.4 Power Transformer and Power Supply

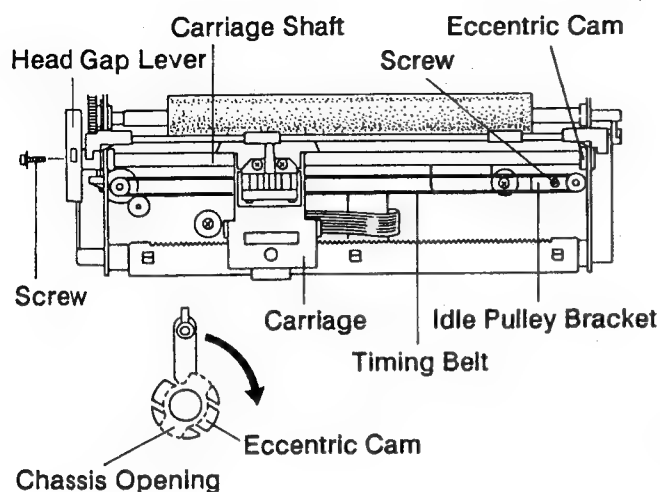
1. Unplug the connector (CN501) from the primary power PCB.
2. Remove the 4 screws from the power transformer.
3. Remove the screws from fuse box and power switch box and remove the GND wire screw.
4. Lift off the AC cord clamp and remove fuse box with power switch box.



4.5 Printhead

1. Remove the 2 screws from the printhead.
2. Carefully raise the printhead and unplug the flat cable.
3. Remove the clamps on the carriage and chassis and unplug the flat cable.

Note: When the printhead is installed, ensure that the head gap is correct.

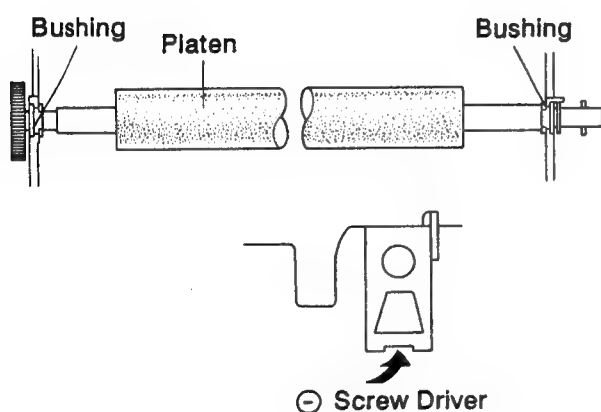


4.6 Carriage Assembly


1. Loosen the idle pulley bracket screw and release the timing belt from the pulley.
2. Remove the head gap lever screw, and then remove head gap lever.
3. Remove the eccentric cam placed on the head gap lever side from chassis opening by turning either clockwise or counter clockwise.
4. Slide out the carriage shaft and remove the carriage assembly.

Note: When the carriage shaft is installed, ensure that the head gap is correct.

When installing the carriage shaft, ensure the GND spring contacts under pressure on surface of the carriage shaft.

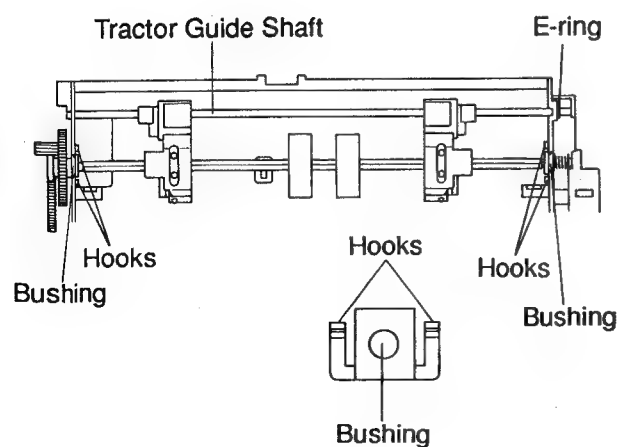


4.7 Platen Assembly

1. Unlatch the platen assembly bushing on both sides by prying up with a  screw driver.
2. Lift off the platen assembly.

Note: Keep the platen assembly on a safe place to avoid damage to the rubber.

When installing the platen assembly, ensure that the GND spring contacts the platen shaft with some pressure.

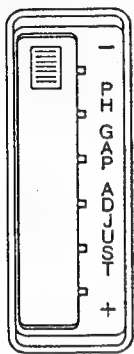


4.8 Tractor Assembly

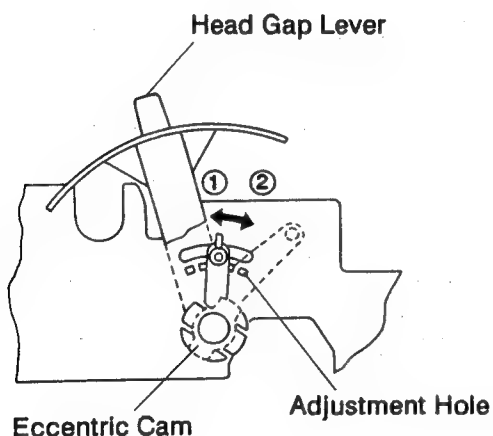
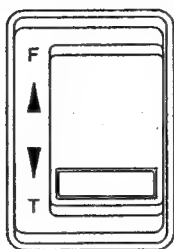
1. Release the tractor guide shaft E-ring and slide out the shaft.
2. Unlatch the hooks and then release the bushing on both sides.
3. Lift off the tractor assembly.

5. Adjustment

Head Gap Lever

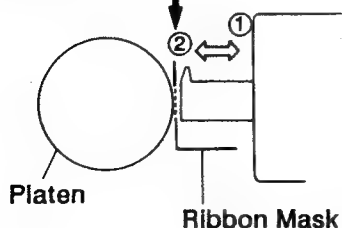


Paper Feed Selector



0.4mm Gauge
(does not pass)

0.35mm Gauge
(does pass)



5.1 Head Gap

1. Set the head gap lever to the single sheet position.
2. Set the paper feed selector to the "T" position.
3. Ensure the printhead is firmly secured with 2 screws.
4. Move the carriage to the print start position on the platen, and adjust the head gap between the platen and the printhead for a clearance of 0.35mm-0.4mm by turning the left eccentric cam.

Moving the head gap lever towards the ① position increases the head gap clearance, and moving toward the ② position decreases the clearance.

5. Move the carriage to the print end position on the platen, and adjust the gap as per step 4 above by turning the right eccentric cam.

Note: The projection on the eccentric cam is released from the adjustment hole by pulling the knob. Turning the eccentric cam one step causes 0.035mm head movement. The eccentric cam can also be released from the adjustment hole through an opening on the inside of the chassis. Use a pin point object to release the eccentric cam without removing the upper cabinet.

Note: Use only a round wire feeler gauge of the specified dimension for this adjustment.

Note: The head gap adjustment is required when replacing the head, platen, carriage, carriage shaft and eccentric cams.

5.2 Print Timing

This adjustment is used for 5 different speeds. The print timing is adjusted using the following procedure:

1. Turn on the power while holding down the FF switch.
2. Select the print speed by pressing the COLUMN switch, and print the "H" pattern by pressing the SET switch.

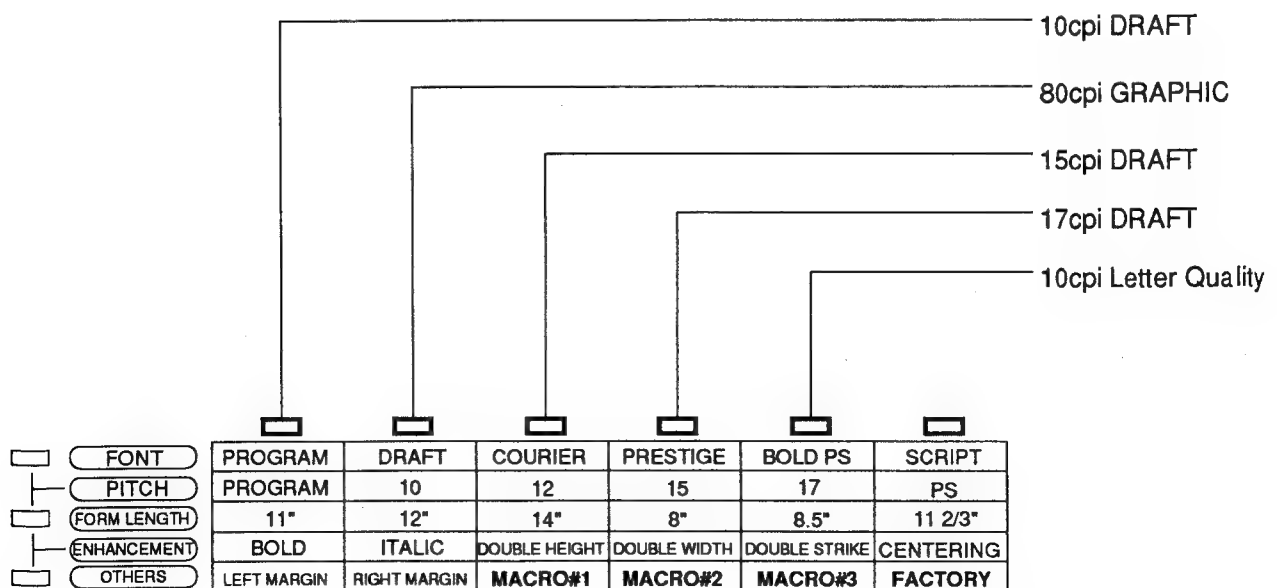
Note: The "H" pattern is printed for 4 full lines for each speed.

3. Check the print timings comparing the "H" pattern from line to line.
4. If the print timing is misaligned, adjust it by using the LF (Move to right) and FF (Move to left) switches and retry the printing for a final check.

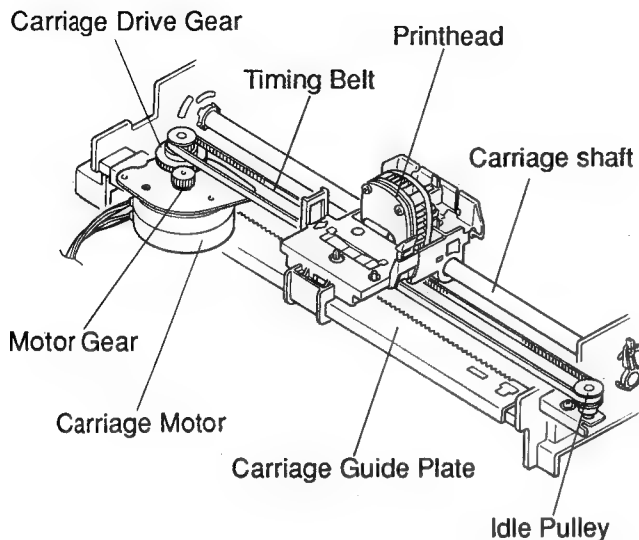
Note: Pressing switch moves the line to move in 1/2160 inch increments.

5. Press the FUNCTION key to save the print timing into memory. The printer shifts to the normal print mode.

Note: If the second line of the "H" pattern is shifted by more than half of an "H" character, check that the printing mechanism is normal before starting adjustment.



6. Mechanical Function



6.1 Carriage Drive System

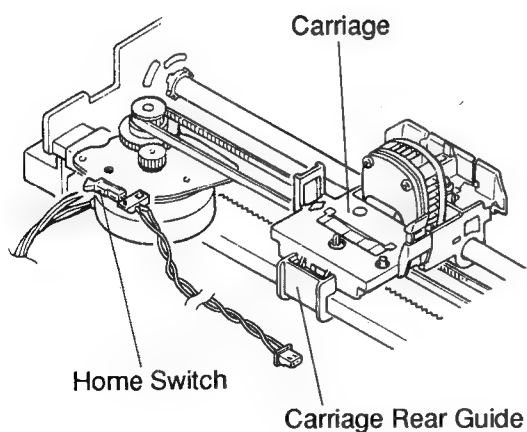
This operation uses a pulse motor to move the carriage 1/60 inch per single drive pulse. The carriage slides on the carriage guide plate and carriage shaft when spacing to the right and left. The printhead is fixed on the carriage by 2 screws.

6.1.1 Power Transmission Mechanism

The rotation of the carriage motor is transmitted to the carriage through the carriage drive gear via the motor gear which is attached to the carriage motor. The timing belt fixed under the carriage is looped around the idle pulley and carriage drive gear. This causes the carriage to move left and right along the carriage shaft. Also, the timing belt is given proper tension by the idle pulley tension spring hooked between pulley bracket and chassis.

6.1.2 Print Timing

Print timing for pica (1/60 inch) and elite (1/60 inch) is generated by a software operated timer. Refer to "Carriage Motor Drive Block" page 8-10.



6.1.3 Home Position Detector Mechanism

The home switch is a leaf switch located at the far left of the printer. Its function is to notify the CPU of the reference position of the carriage. During spacing operation, when the carriage approaches the left margin, the carriage rear guide, mounted on rear of the carriage, actuates the home switch, generating the signal and indicating carriage position the CPU.

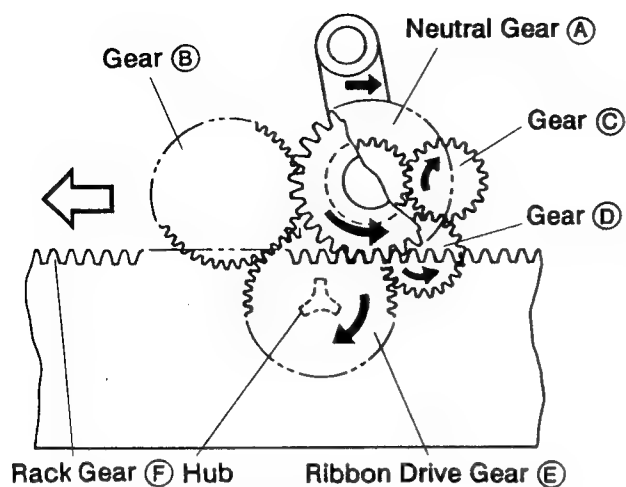


Fig.1 (Bottom View)

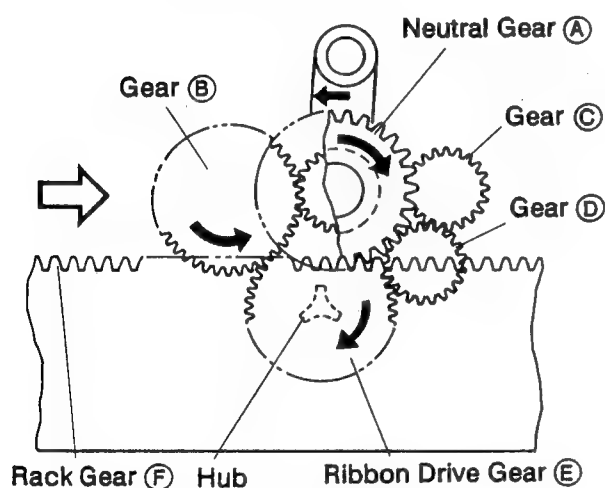
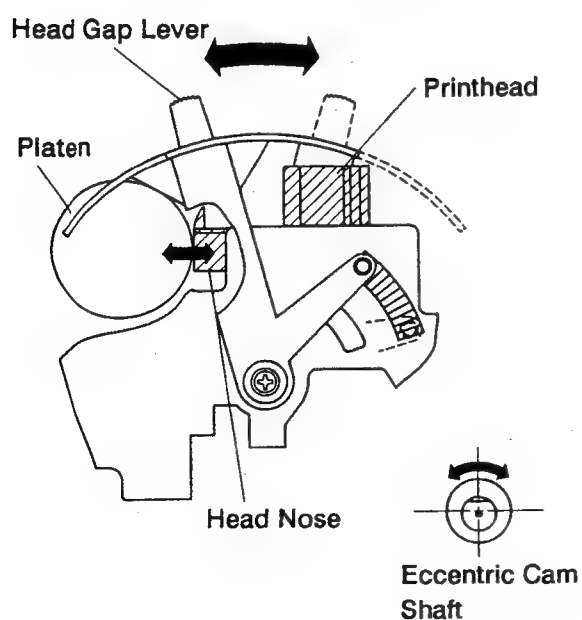


Fig.2 (Bottom View)



6.1.4 Ink Ribbon Cassette Drive Mechanism

This function performs the ribbon feed operation in accordance with the movement of the carriage. The ink ribbon cassette drive mechanism is shown in Figures 1 and 2.

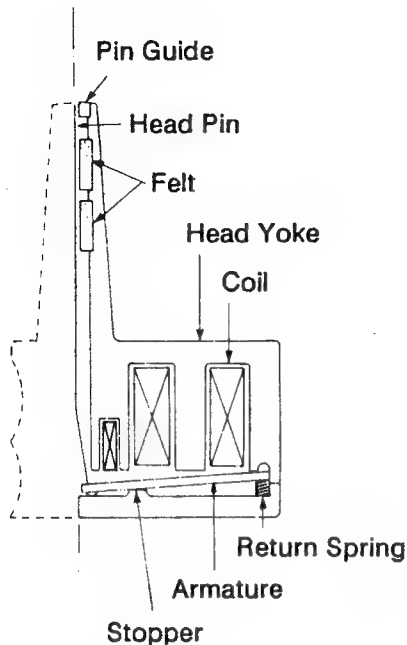
This mechanism gives uniform ribbon feed regardless of the direction of the carriage movement. It consists of the rack gear (F), ribbon drive gear (E) with the ribbon feed hub and 3 gears.

When the carriage moves to the right (Fig.1), rack gear (F) turns the neutral gear (A) counter-clockwise, and then neutral gear (A) engages with gear (D) via the gear (C) which turns the ribbon drive gear (E) clockwise with the hub.

When the carriage moves to the left (Fig.2), rack gear (F) turns neutral gear (A) clockwise, and then neutral gear (A) engages with gear (B) which turns ribbon drive gear (E) clockwise with the hub.

6.2 Paper Thickness Selection

Selection for the number of copies is made by changing the distance between the platen and the print-head nose tip. When the head gap lever is operated, the eccentric cam shaft revolves, moving the carriage forward or backward.



6.3 Printhead

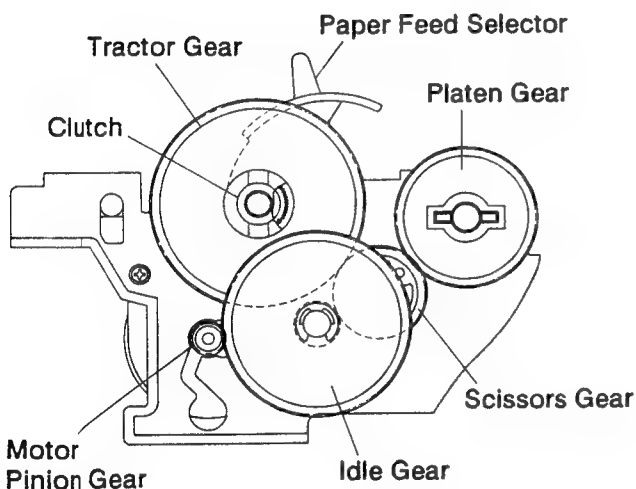
The printhead utilizes 24 electromagnets as a driving source, which causes the pins to strike through the ink ribbon against the platen onto the typing paper for matrix printing. The construction of the printhead is shown at left.

6.3.1 Power Transmission Mechanism

The set of 24 electromagnets consists of a one piece yoke and 24 coils. The armature which secures the pins is supported by this yoke.

6.3.2 Printhead Pin Operation

When a coil assembly is excited by a print signal, the armature is drawn in, and the pin secured by the armature is guided by the various guides to move in the direction of the platen. The pin strikes through the ribbon to the paper. Next, the return spring moves the armature and pin from the platen back to the rest position.

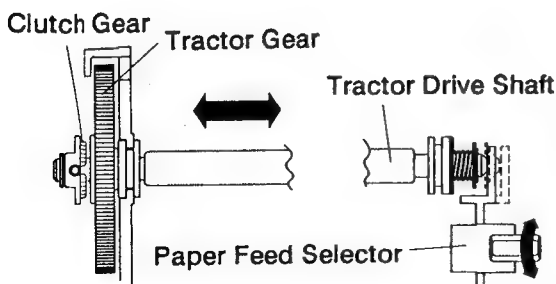


6.4 Paper Feed Mechanism

A DC pulse motor is used for paper feed. Both continuous paper and single sheet can be fed by operating the paper feed selector. Continuous paper is loaded on both the left and right sides of the pin drum of the tractor drive device. Continuous paper is fed from the bottom or rear of the printer. Signal sheet paper is fed from upper slot on top of the printer. The paper feed mechanism is shown below.

6.4.1 Power Transmission Mechanism

Rotation is transmitted from the pulse motor to the platen gear and tractor gear via the idle and scissors gears. The tractor gear consists of a drive gear and clutch mechanism which functions when operating the paper feed selector. The selector lever pushes end of the tractor shaft to disengage the tractor drive device from the tractor gear, and then releases the spring loaded friction rollers by rotating the cam shaft to apply the gripping force for single paper feed. The tractor drive mechanism consists of a pin wheel with a spring loaded a tractor cover and a drive shaft to feed continuous paper.

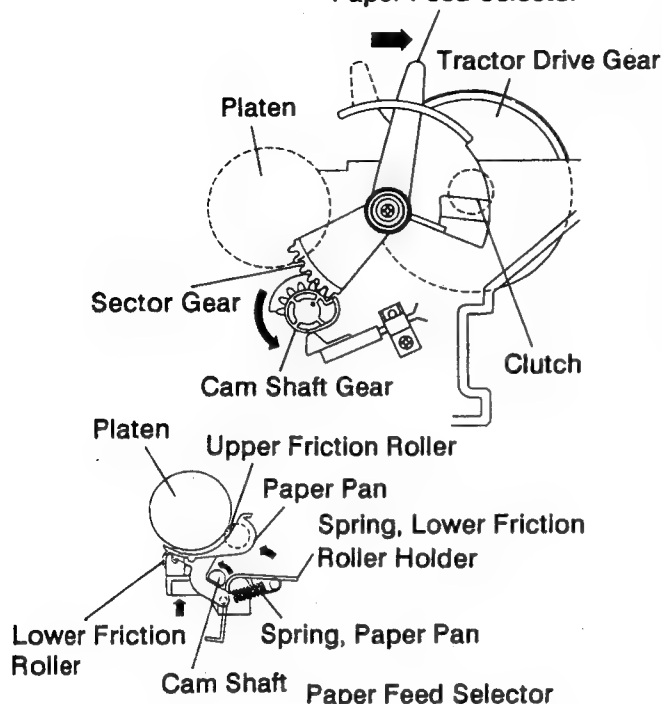


Paper Feed Selector

6.4.2 Paper Feed Mode

(1) Friction Paper Feed Mode

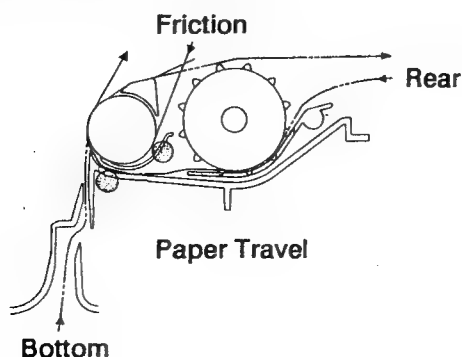
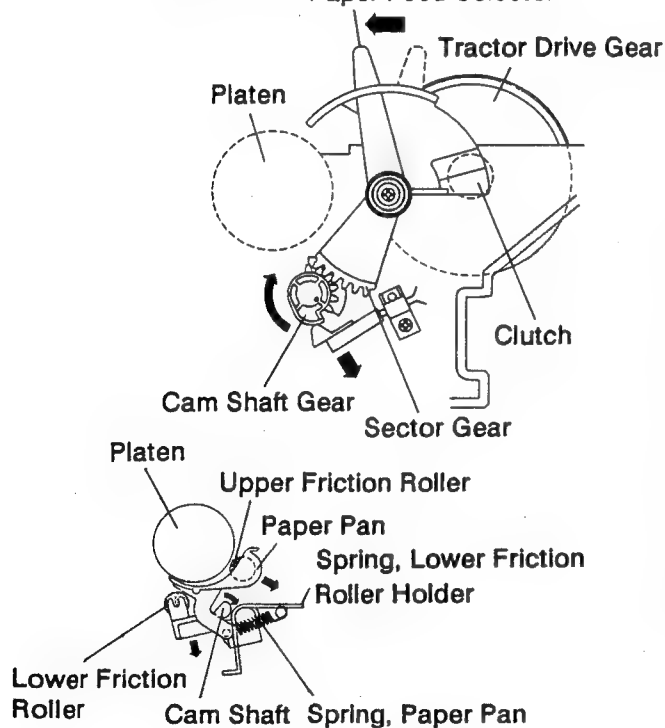
This mode is for feeding single-sheet paper from the slot on top of the printer in the friction paper feed position. By operating the paper feed selector, the tractor drive gear is disengaged from the tractor drive device, and the paper feed selector lever releases the spring loaded upper and lower friction rollers by rotating the cam shaft to apply gripping force to the platen. This enables paper feeding with platen rotation.

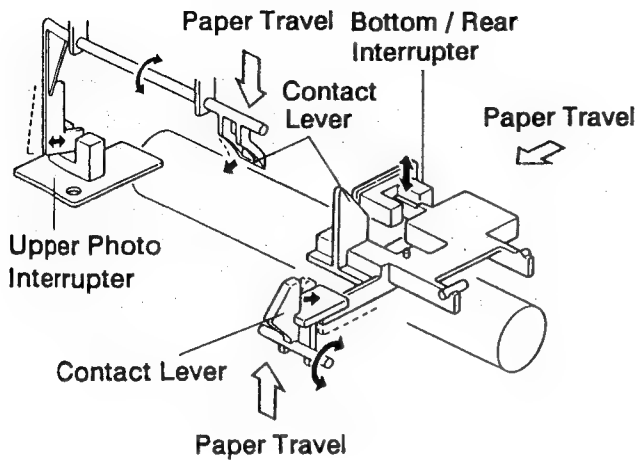


(2) Tractor Paper Feed Mode

This mode is for feeding continuous paper from either the bottom or rear of the printer. By moving the paper feed selector to the "T" position, the tractor drive gear is engaged with tractor drive shaft by cam function, which enables turning the tractor drive mechanism. Then the sector gear molded on the paper feed selector turns the cam shaft, which moves the upper and lower friction rollers away from the platen to enable free paper passing from the rear feed. The paper feed selector also pushes the leaf switch to notify the CPU that the selector is in the "T" position when turning the lever.

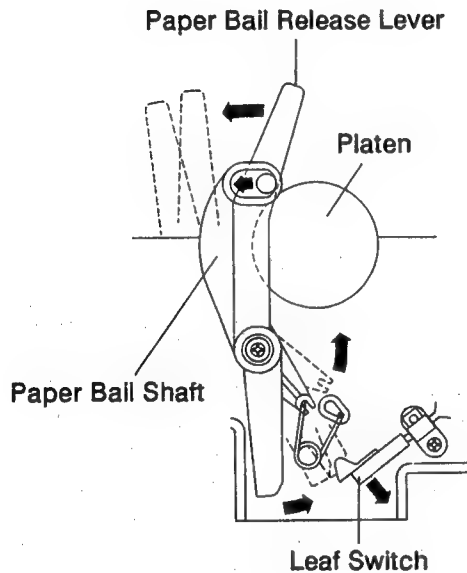
Continuous paper can be fed with either pull or push feed. Feed from the tractor upper side enables pull feed, and feed from the tractor lower side enables push feed.





6.5 End of Paper Detectors

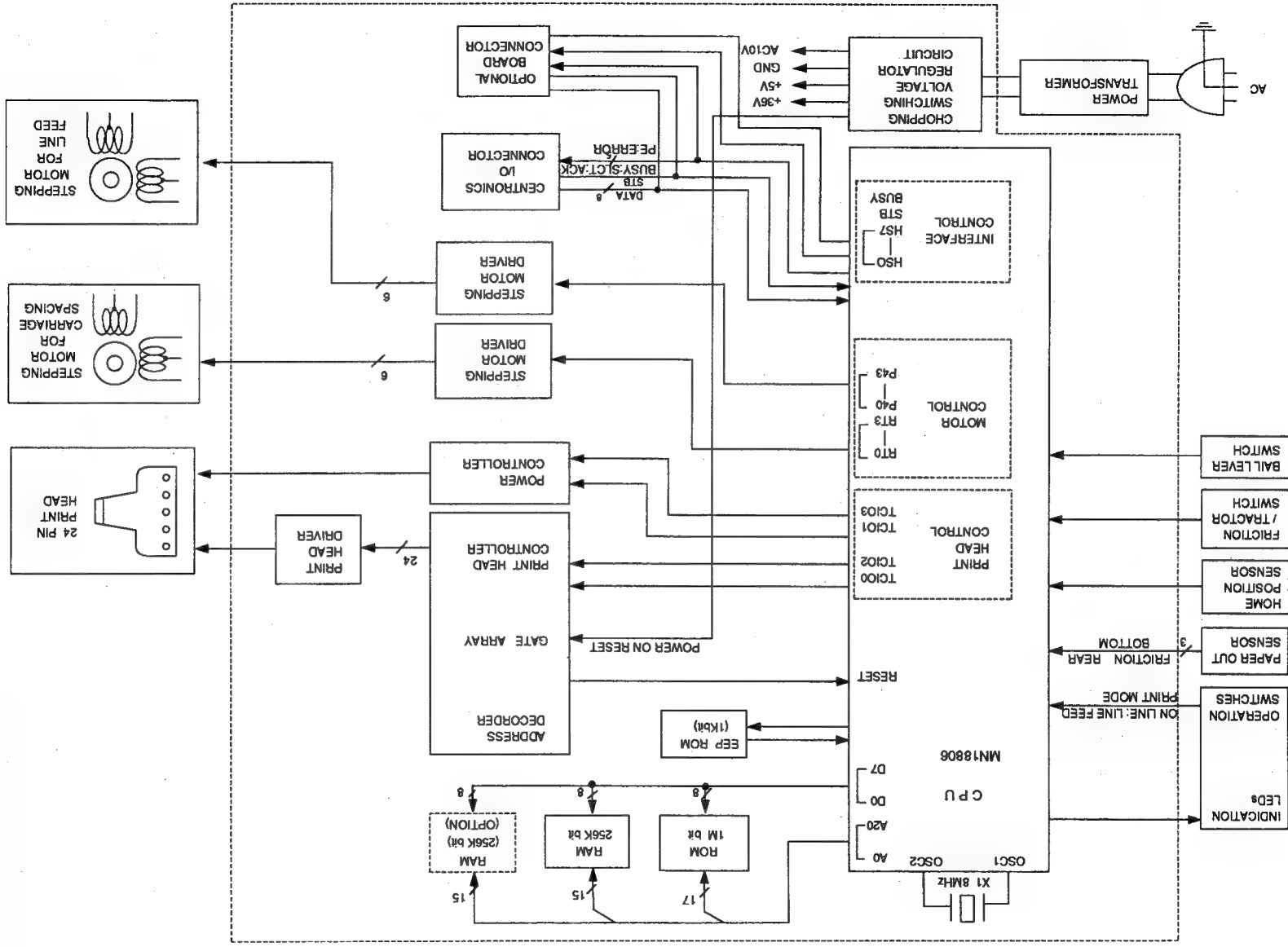
The printer has two photo interrupters used for detecting paper out in continuous or a single paper feed. The upper photo interrupter is mounted under the upper slot. The bottom and rear photo interrupters are mounted under the tractor drive mechanism, and those contact levers are respectively placed in the upper slot, in the bottom slot and under the tractor pin wheel. When paper is out, the contact lever shuts off the photo switch by breaking the light beam, and a signal is sent to the CPU.



6.6 Paper Load

Pulling the paper bail release lever forward moves the paper bail away from the platen. Continued forward movement of its lever causes the leaf switch to be actuated for paper auto loading and memo loading.

7. Electronic Circuit Block Diagram

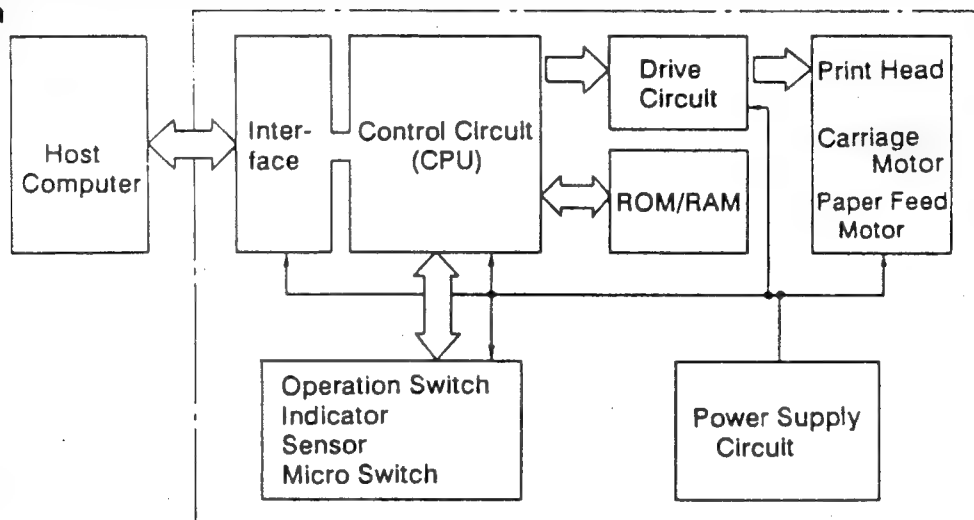


8. Electronic Circuit Descriptions

8.1 Principle of Operation

The KX-P1123 has three switches and two sensors. The home position switch sets a reference for the carriage and is necessary for aligning the first position. The Friction/Tractor switch detects the way of paper-feed by Friction or Tractor. The Bail Lever Switch is actuated for paper auto loading and memoload. The paper out sensors detect paper end, and prevent printing operation when the printer is out of paper. The printer has three drive circuits; carriage spacing motor, paper feed motor and printhead. The control panel is composed of switches and LEDs which indicate the various states of the printer.

Logic Diagram

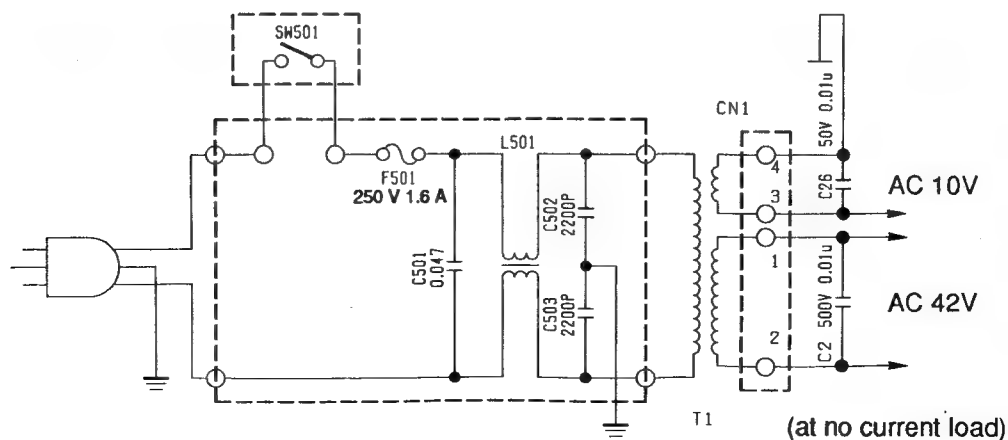


8.2 Circuitry

8.2.1 Power Supply Block

(1) Power and Filter Block

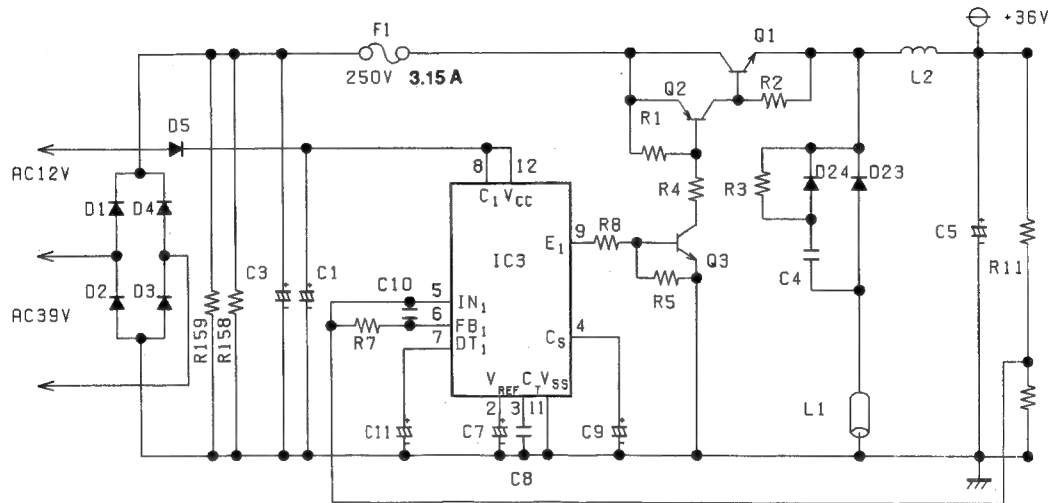
The fuse and filters are attached to a single printed circuit board. Primary power enters the power switch and passes through fuse F501 (1.6A). Absorption capacitors (C501, C502 and C503) together with choke (L501), located near the primary transformer, prevent noise from entering the circuit from the power source, and prevent noise from leaving the printer to the power source. As a result, the printer's digital circuitry operates very stably, unaffected by line noise, and prevents printer noise from affecting the outside power source.



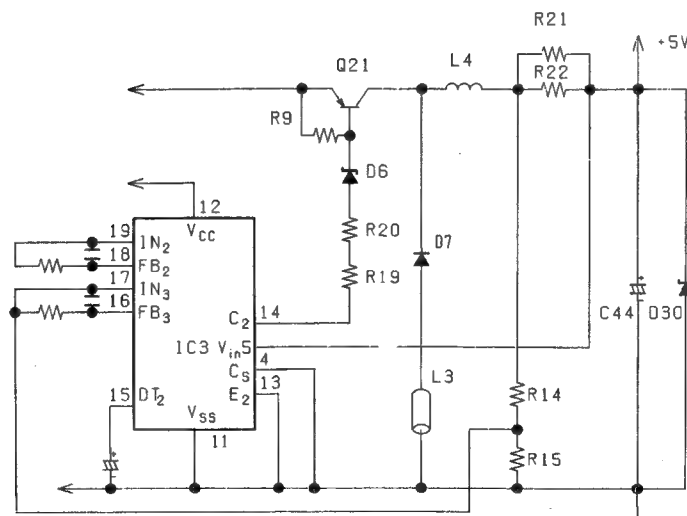
(2) Power Circuitry

Three kind of voltage are needed on this board. DC+36V is used for motor and print head drivers, DC+5V is for logic circuit, and AC 12V is for Serial Interface optional board. The AC 42V, provided from secondary side of transformer, is rectified by the diode bridge circuit. DC+36V is provided from rectified voltage by switching Q1. DC+5V is provided from DC+36V by switching Q4. IC3 (AN8081K) is pulse width modulation control IC (step-down type).

(a) DC + 36V Switching Regulator Circuit



(b) DC + 5V

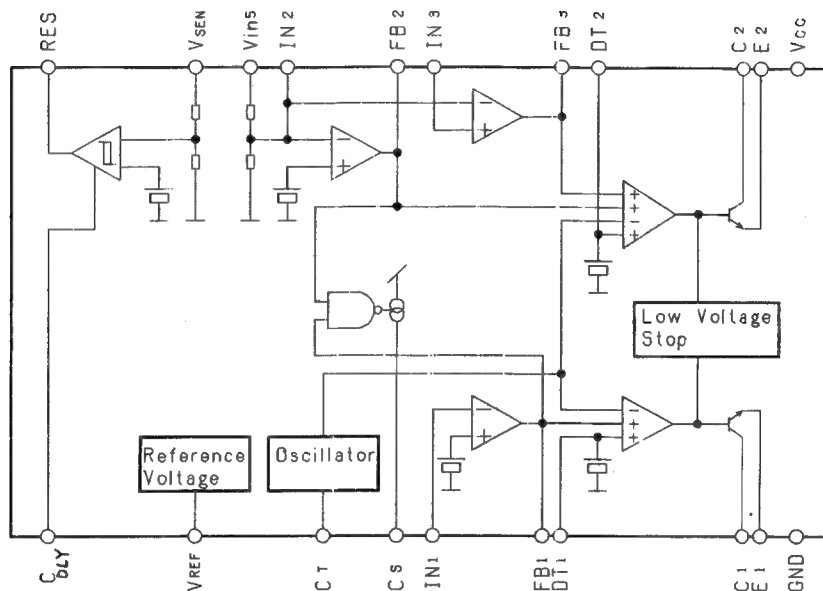


(c) IC3 (AN8081K)

This regulator IC is consisted of two PWM voltage control circuits and reset circuit. One PWM voltage control circuit is for only DC + 5V output and the other is for variable voltage output. Over current protection is prepared for DC + 5V-GND short. DT1 and DT2 are used for "Soft Start" when power is turned on. Switching frequency (f_s) is determined by CT capacitor.

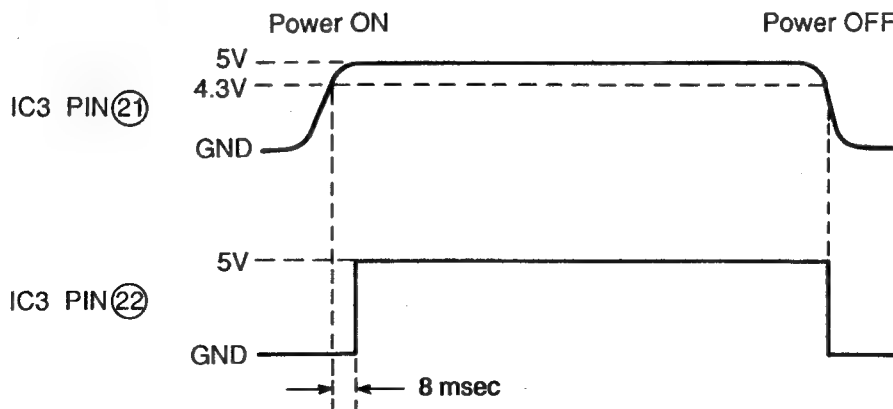
$$f_s \approx 5 \times 10^{-5} \times \frac{1}{C} \text{ (Hz)}$$

AN8081K Block Diagram



(d) Reset Circuit

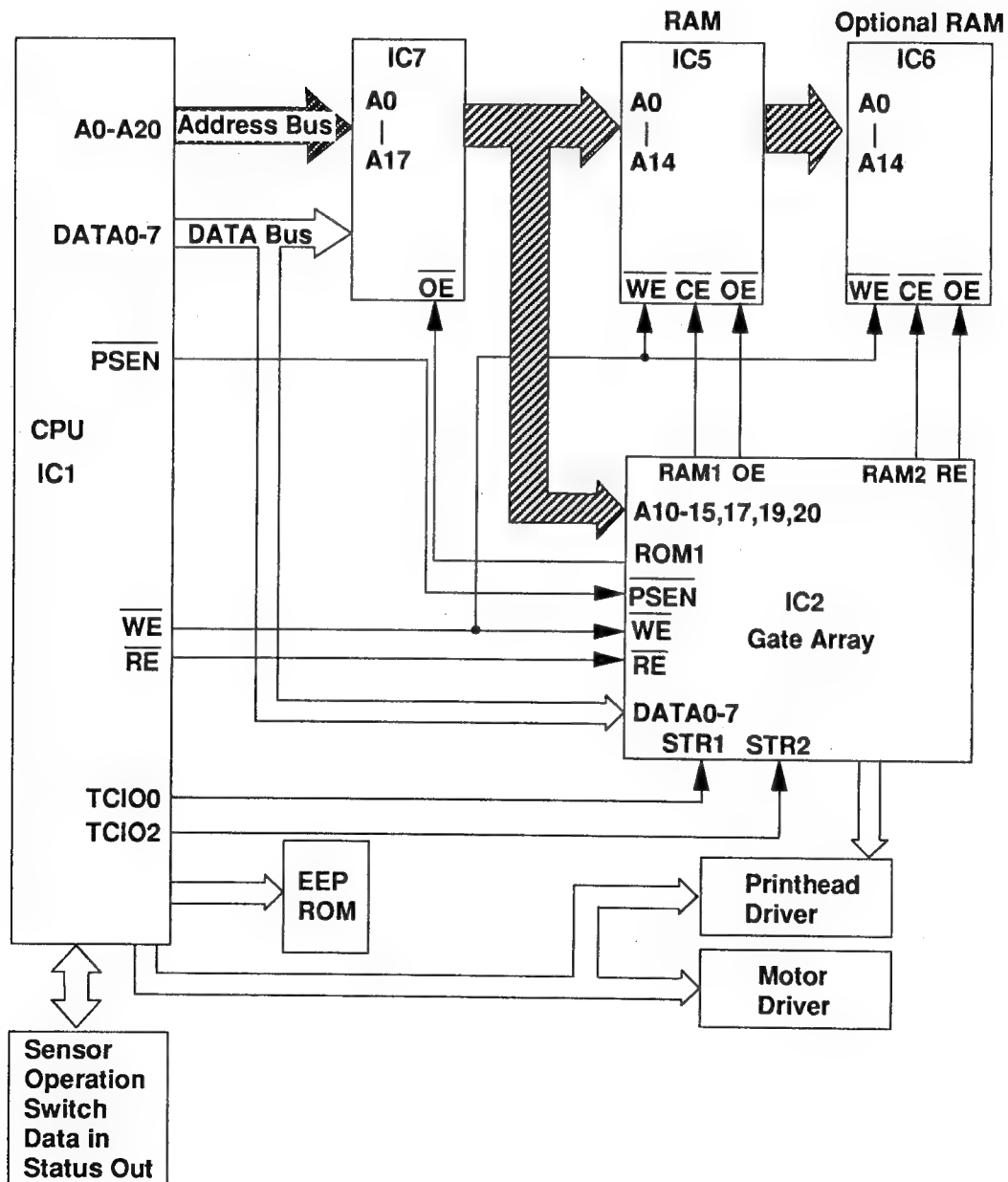
The reset circuit is provided to initialize the gate array (IC2) and the MPU (IC1). About 8msec after the voltage at IC3 pin 21 reached at approximately 4.3V, the reset terminal RES changes from L to H.



8.2.2 CPU, Gate Array and Peripheral Circuit Block

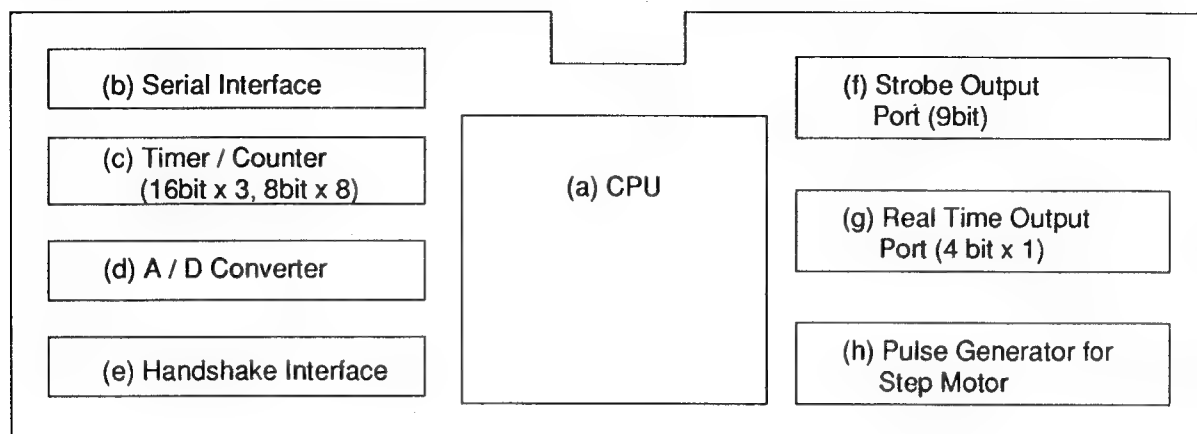
- (1) This block diagram consists of the CPU(IC1), Gate Array(IC2), ROM(IC7), RAM(IC5) and optional RAM(IC6). CPU receives the data from the host computer, processes the input from the printhead over-heat sensor and operation switch. It also controls the carriage, paper feed motors and the printhead.

ROM contains the operation program, which controls data processing and mechanical functions. Also it contains the character generator, which determines the appearance of the characters.



(2) CPU Functions

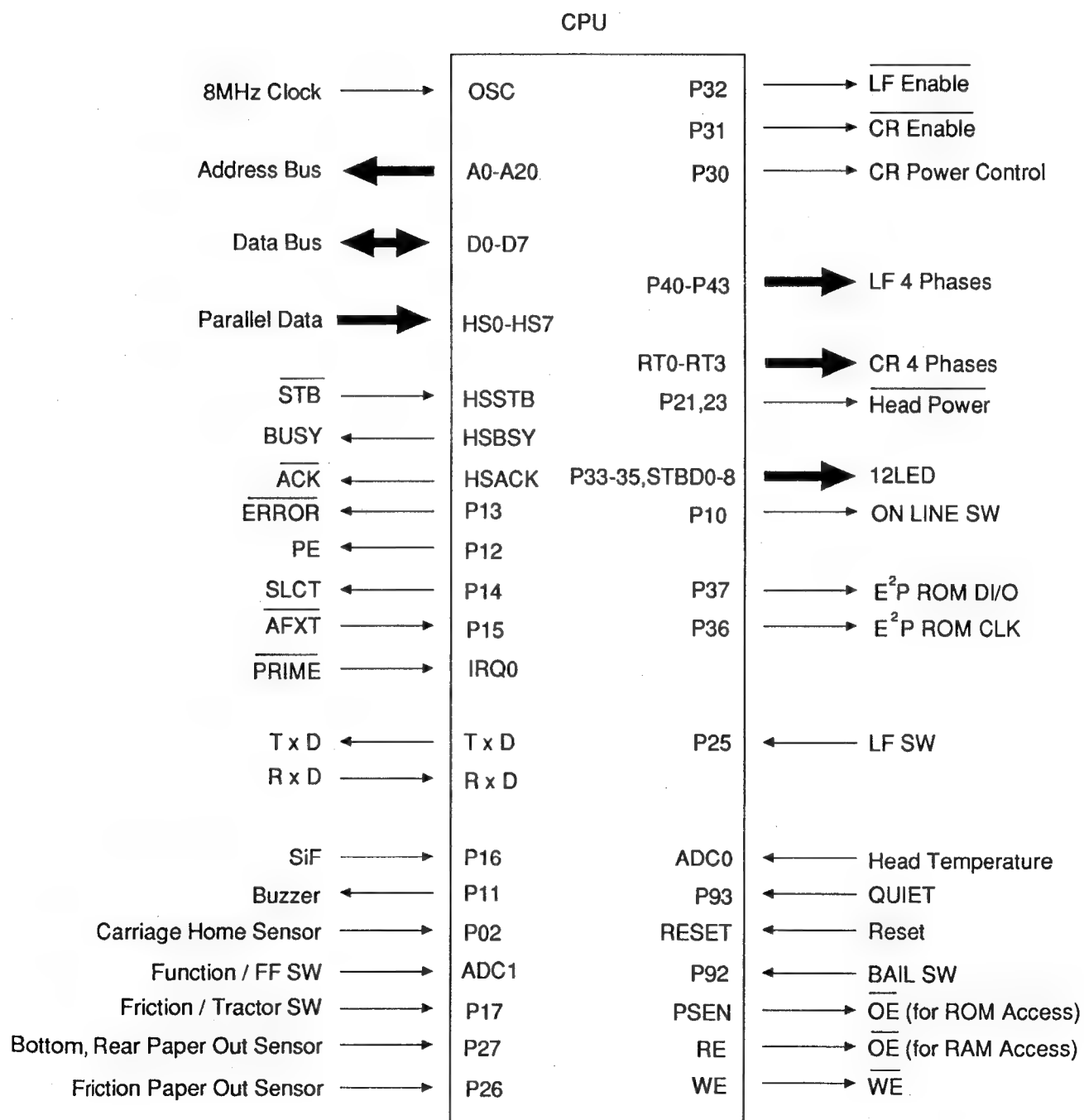
MN18806 Block Diagram



- (a) CPU
This block mainly consists of the Program Counter, Arithmetic Logical Unit, and Instruction Decoder. This block fetches the program from the ROM, decodes the instructions, and processes it accordingly.
- (b) Serial Interface
This block supports a serial communication interface (synchronous and asynchronous). This block also has a baud rate generator of up to 9600 baud.
- (c) Timer/Counter
This block consists of three 16-bit timers and eight 8-bit timers. They are used for generating the timing for the printhead and carriage motor.
- (d) A/D Converter
In this CPU, 8 bits/4 channel A/D Converters are prepared. In this model, one channel is used for sensing the overheat of the printhead and other channels are used for input of switches.
- (e) Handshake Interface
In this CPU, the Centronics Parallel interface (usually called Handshake Interface) is prepared. The busy signal to the host computer is generated automatically when receiving the DSTB(data strobe) signal. And the acknowledge signal is also generated automatically when the busy signal turns to L level(Ready state).
- (f) Strobe Output Port
This port is used for driving 9 LEDs on the Control Panel. The other 3 LEDs are driven by the I/O ports.
- (g) Real Time Output Port
In this block, 4channel real time ports are included. All of these are used as a real time output port for power and timing control of printhead.
- (h) Pulse Generator for Step Motor
In this CPU, pulse generator for step motor is prepared. This function is used for carriage spacing motor. Motor driving pattern is generated automatically when the generator receives the starting signal. And the pattern is synchronized with the output of the timer which determines motor pulse rate.

(3) CPU Pin Functions

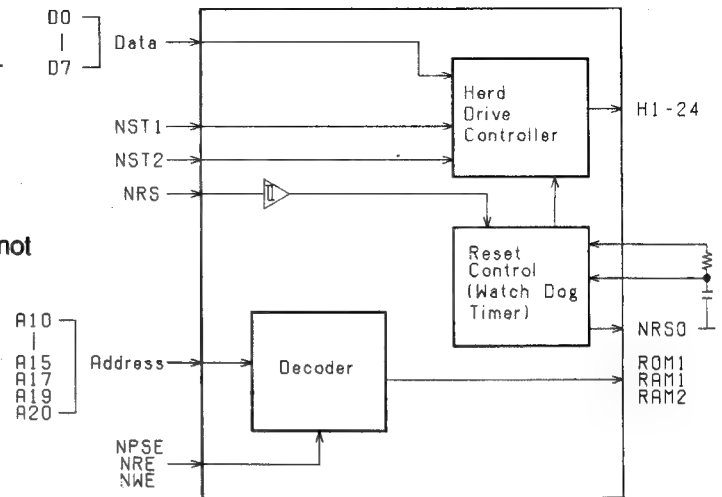
The CPU has total of 100 pins and an 8MHz input clock. It controls a 128KB ROM, 32KB RAM, 32KB optional RAM, and an optional interface board. These RAMs are used as an input buffer, line buffer, bit image buffer, and download area. The CPU pin functions are as follows.



(4) Gate Array

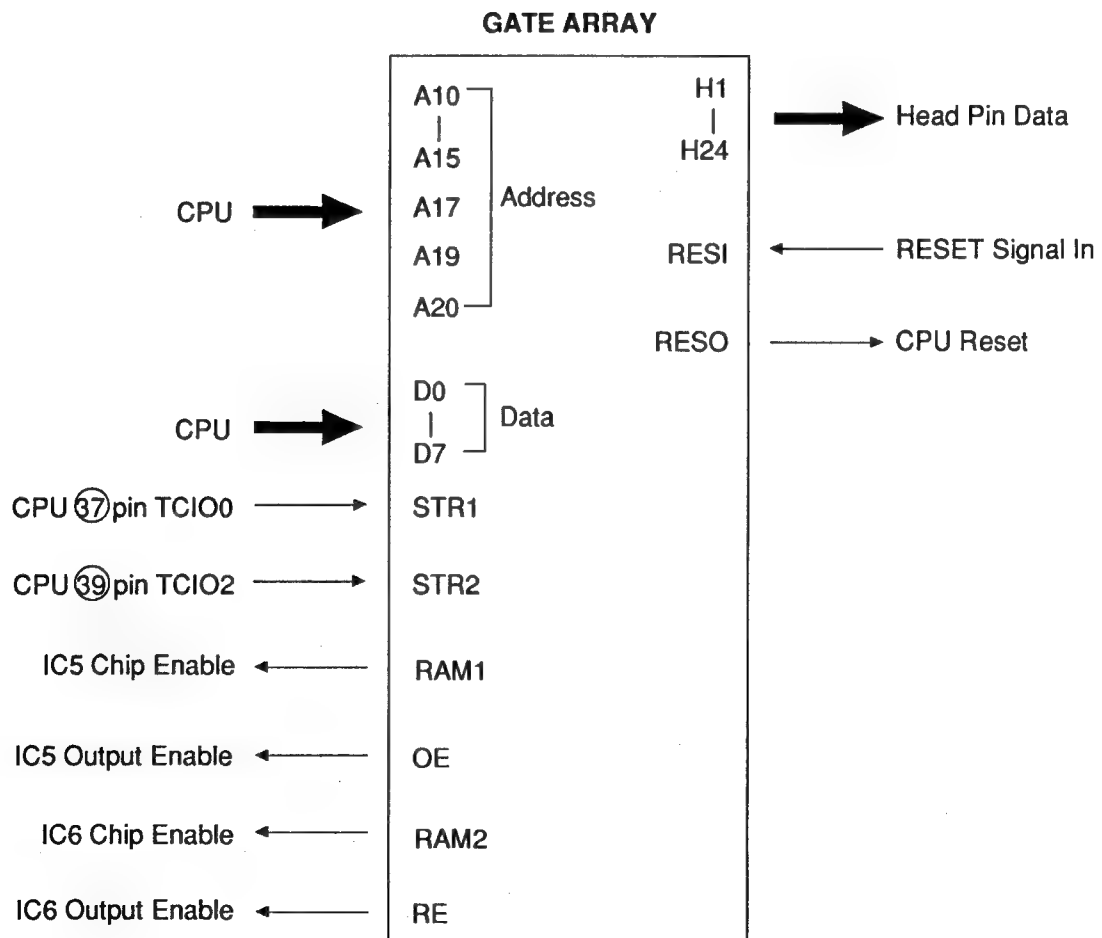
The gate array(IC2) is a 64 Pin Flat Package and it consists of 3 blocks:

- (a) **Decoder**
It is used for access and refresh for RAMs.
- (b) **Head Drive Controller**
Head data are output.
- (c) **Reset Control (Watch Dog Timer)**
When power is on or when program does not run properly, reset pulse is generated.



(5) Gate Array Pin Function

The pin functions are as follows.



(6) Chip Select Block

The CPU can access to 128K Byte ROM area and 64K Byte RAM area.

ROM Memory Map

Address (DECIMAL)	Address (Hex)	PSEN	Chip	Description
0-131071	00000H 1FFFFH	L	ROM(IC7)	128K Byte

RAM Memory Map

Address (DECIMAL)	Address (Hex)	A20	A19	A17	A15	A14	A13	A12	A11	A10	A9 A0	Chip
0	0000H	0	0	0	0	0	0	0	0	0	0	Not Used
1024	0400H	0	0	0	0	0	0	0	0	1	0	H1,3,5,7
2048	0800H	0	0	0	0	0	0	0	1	0	0	H9,11,13,15
3072	0C00H	0	0	0	0	0	0	0	1	1	0	H17,19,21,23
4096	1000H	0	0	0	0	0	0	1	0	0	0	H2,4,6,8
5120	1400H	0	0	0	0	0	0	1	0	1	0	H10,12,14,16
6144	1800H	0	0	0	0	0	0	1	1	0	0	H18,20,22,24
7168	1C00H	0	0	0	0	0	0	1	1	1	0	RAM5 Refresh Information
8192 32767	2000H 7FFFH	0	0	0	0	0	1	0	0	0	0	RAM(IC5)
		0	0	0	0	1	1	1	1	1	1	
32768 65535	8000H FFFFH	0	0	0	1	0	0	0	0	0	0	RAM(IC6)
		0	0	0	1	1	1	1	1	1	1	

Gate Array (IC2)

8.2.3 Parallel Interface Circuit

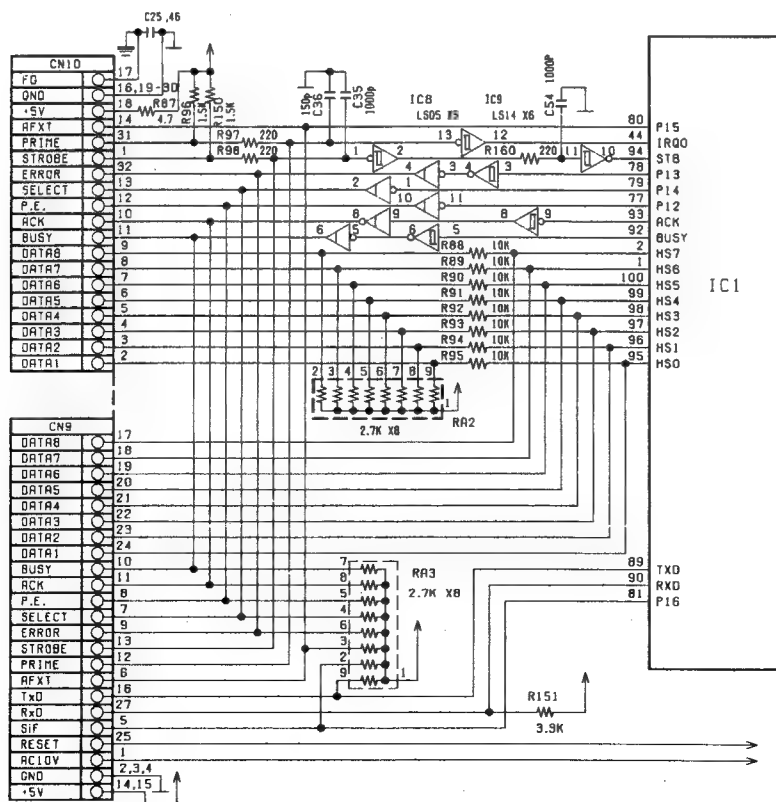
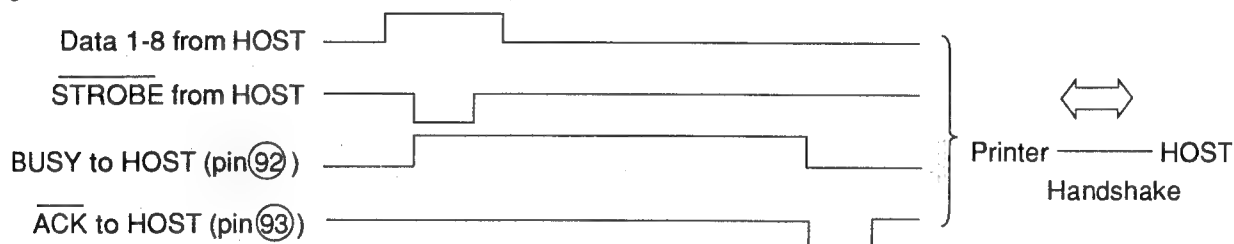
The Interface Block receives data from the host computer and generates the appropriate status signals. The handshake method is described in the following steps.

Process

- (1) A $\overline{\text{STROBE}}$ signal is sent from the host computer and is used to set the internal latch of the CPU. At the same time CPU pin 92 sends a BUSY signal to the host computer through IC8 pin 6.
- (2) The CPU checks the internal latch periodically and checks whether a $\overline{\text{STROBE}}$ is sent or not.
- (3) If a $\overline{\text{STROBE}}$ signal has been sent, the CPU reads the data from HS ports (HS0-HS7). Then the internal latch is cleared automatically.
- (4) When the BUSY signal disappears, an ACK (Acknowledge) signal is sent to the host computer automatically during the time determined by software.
- (5) The CPU then judges the received data as to whether it is a character code, control code or bit image data and processes the data accordingly.
- (6) The CPU processes another command (for instance; operation switch state check, motor drive during print).

Thus the data received by handshake is accomplished.

Timing Chart



8.2.4 Carriage Motor Drive Block

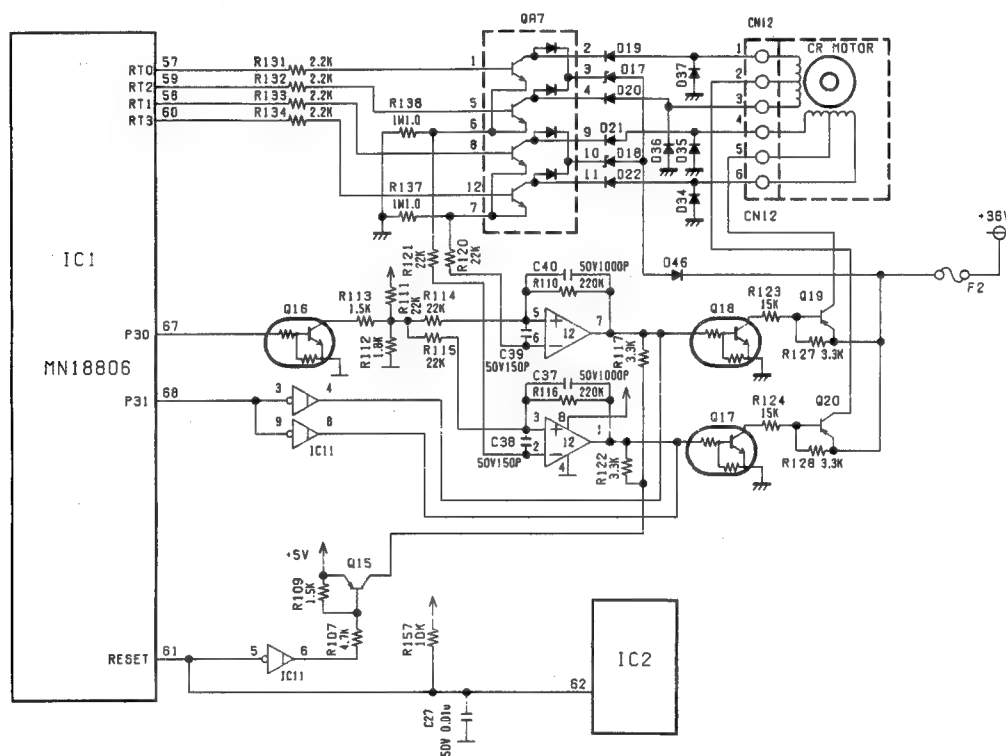
The Carriage motor is driven by the four signals from RT0, RT1, RT2 and RT3, and is driven by 1-2 phase driving system.

The time interval is determined by the CPU's interval counter clock as generated from the CPU's clock.

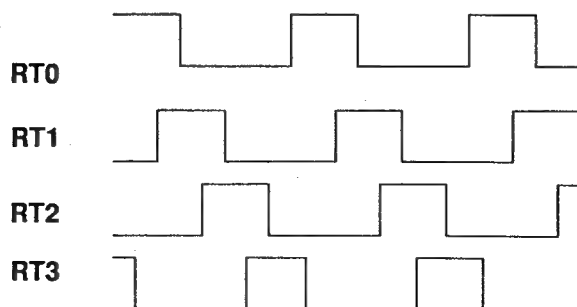
This circuit is a chopper drive circuit for fixing the amount of the current through the motor during stepping and has two threshold voltages (V_{SH} , V_{SL}). IC12 compares the voltage drop across R138(R137) which is in proportion to the current through the motor. For example, when the voltage drop across R138(R137) is larger than V_{SH} , IC12 is turned off and Q17(Q18) is turned off, then Q20(or Q19) is turned off. At the same time, the current through the motor decreases, because the voltage drop across R138(R137) decreases. When this voltage drop is smaller than V_{SL} , IC12 is turned on, and the current through the motor increases.

The amount of current through the motor is fixed during stepping by repeating this process.

These threshold voltage (V_{SH} , V_{SL}) are able to be changed by P30 H or L signal according to the print mode.



Timing Chart



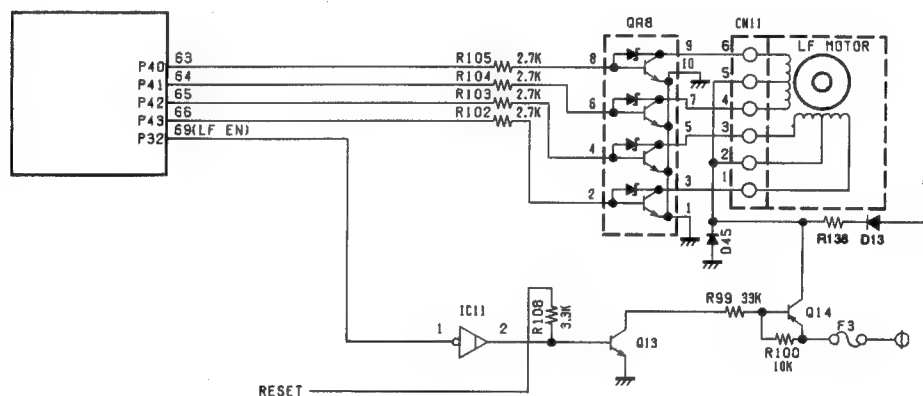
Pulse Rate Chart

Relation between the printing mode and the pulse rate is shown in the chart.

Printing Mode		Pulse Rate (PPS)	Current Control
			P30
Holding State		0	H
DRAFT	10CPI	1916	L
	12CPI	1916	L
	15CPI	1263	H
	17CPI	958	H
	20CPI	958	H
LQ	10CPI	639	H
	12CPI	639	H
	15CPI	639	H
	17CPI	639	H
	20CPI	639	H

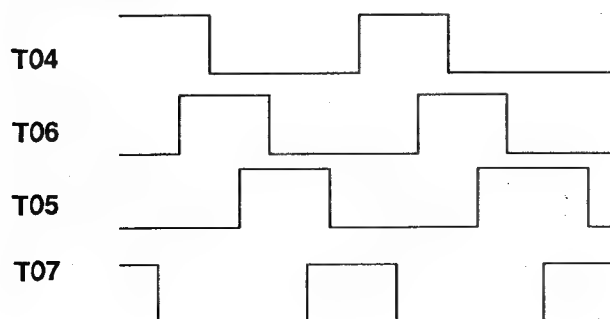
8.2.5 Paper Feed Motor Drive Block

During paper feed, the CPU sets P32 at the L level and turns on Q13 and Q14. +36V is fed to the motor as a result. The exciting method by P40, P41, P42 and P43 is 1-2 driving system and the pulse rate is 792 pulse per second. When paper feed is not done, Q13 is turned off because of P32's H level signal and the power is not supplied to the motor.



Paper Feed Motor

Timing Chart



Pin No. (CN11)	Resistance Value
1-2	120 \pm 2 ohms
3-2	120 \pm 2 ohms
4-5	120 \pm 2 ohms
6-5	120 \pm 2 ohms

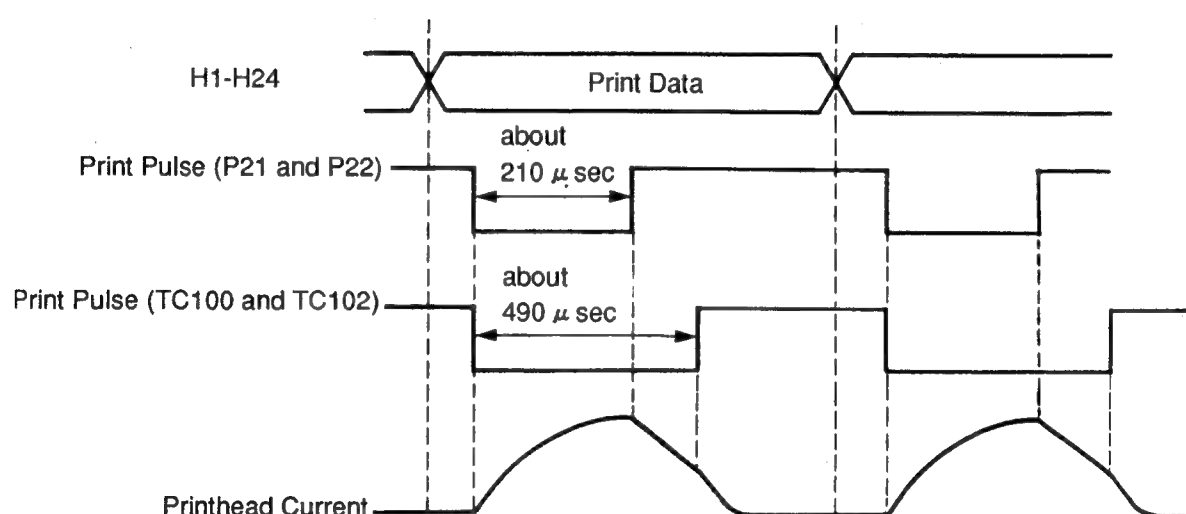
8.2.6 Head Drive Block

This block consists of QA1-6 and Q5-10. QA1-6 control each pin and Q5-10 control the power supplied to the printhead.

The CPU sets the data to be printed into H1-H24 of IC2(Gate Array). Then the CPU sets the printing pulse and triggers TC100 and TC102 terminal of IC1. During this time, the head pin solenoids are fired by QA1-6 according to the data. The power supplied to the printhead is controlled by P21 and P23 through Q5 and Q6.

Thermistor is attached in the printhead and is used for detecting overheat of printhead in directly.

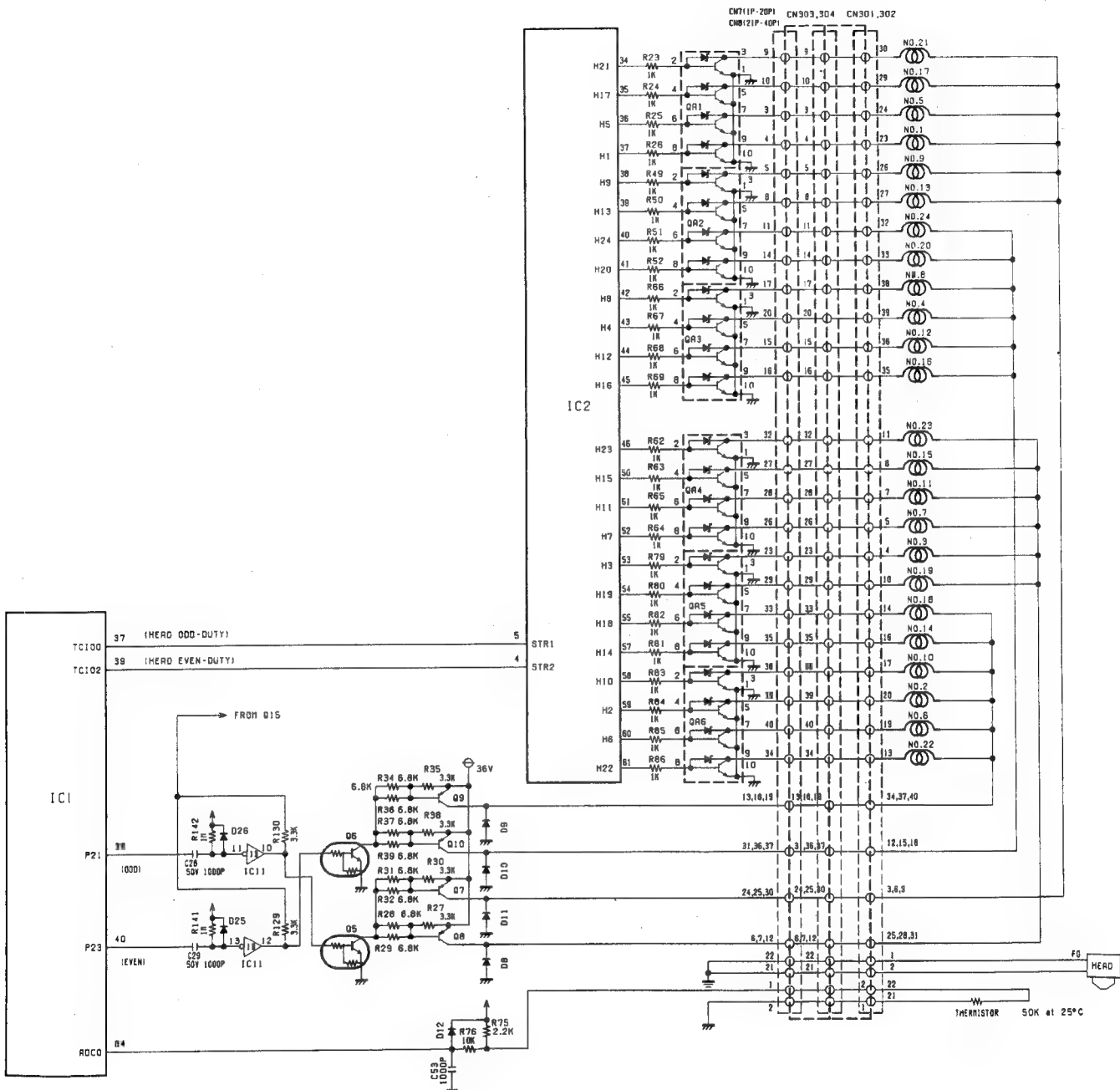
Timing Chart



Printhead

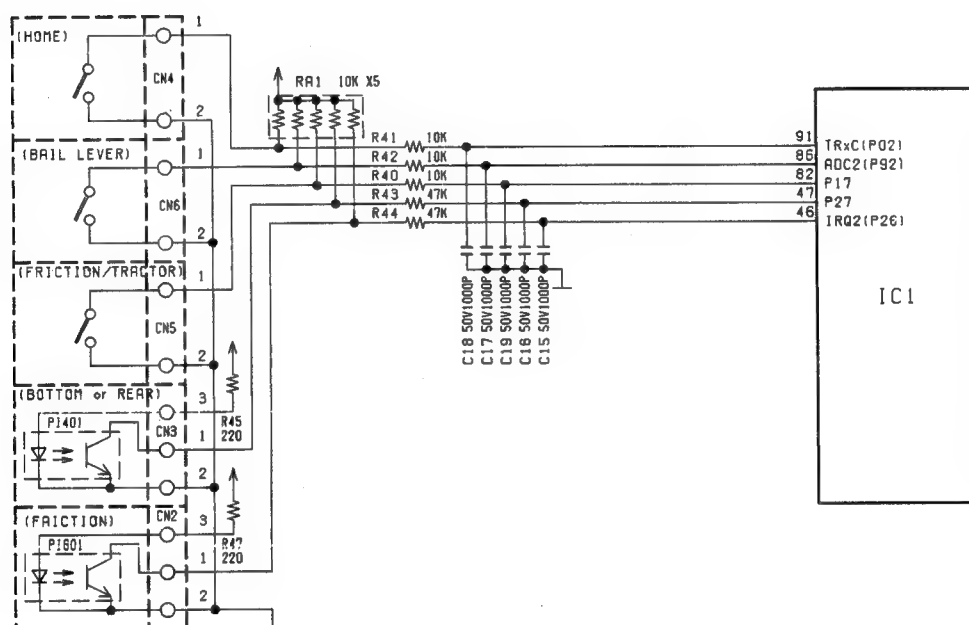
Pin No. (CN9,10)	Resistance Value	Pin No. (CN9,10)	Resistance Value	Pin No. (CN9,10)	Resistance Value
2-1	20 \pm 1 ohms	16-14	20 \pm 1 ohms	39-27	20 \pm 1 ohms
4-1	20 \pm 1 ohms	11-18	20 \pm 1 ohms	40-27	20 \pm 1 ohms
3-6	20 \pm 1 ohms	13-18	20 \pm 1 ohms	28-30	20 \pm 1 ohms
5-6	20 \pm 1 ohms	15-21	20 \pm 1 ohms	29-30	20 \pm 1 ohms
8-7	20 \pm 1 ohms	20-21	20 \pm 1 ohms	31-37	20 \pm 1 ohms
10-7	20 \pm 1 ohms	25-24	20 \pm 1 ohms	38-37	20 \pm 1 ohms
22-12	20 \pm 1 ohms	36-24	20 \pm 1 ohms	33-35	46 \pm 5K ohms
23-12	20 \pm 1 ohms	32-26	20 \pm 1 ohms		
9-14	20 \pm 1 ohms	34-26	20 \pm 1 ohms		

Circuit Diagram



8.2.7 Sensor and Switch Circuits

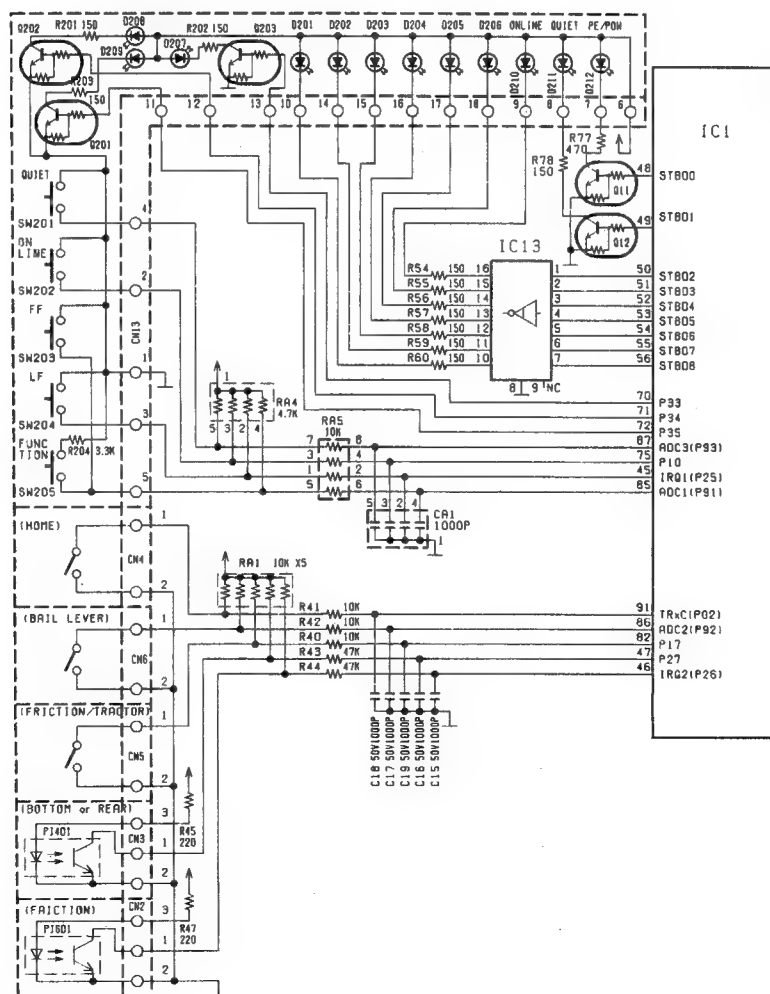
- (1) The home position sensor is for the purpose of moving the carriage to reference position (home position) at the left end of the carriage when the power switch is turned on or reset signal is generated. When the carriage comes to the home position, TRxC (pin 91) changes from L to H level.
- (2) Two paper out sensors are provided. In case of rear tractor paper feed or bottom paper feed, P27 (pin 47) changes L to H level and LED flashes to indicate paper out status when rear paper end sensors detects paper out. In case of friction paper feed, IRQ2 (pin 46) is used for detecting paper out.
- (3) When paper feed select switch is set to the friction position, P17 (pin 82) is at H level. When it is set to the tractor position, P17 is at L level.
- (4) When the paper bail lever is pulled, ADC2 (pin 86) is at L level and printer loads paper automatically.



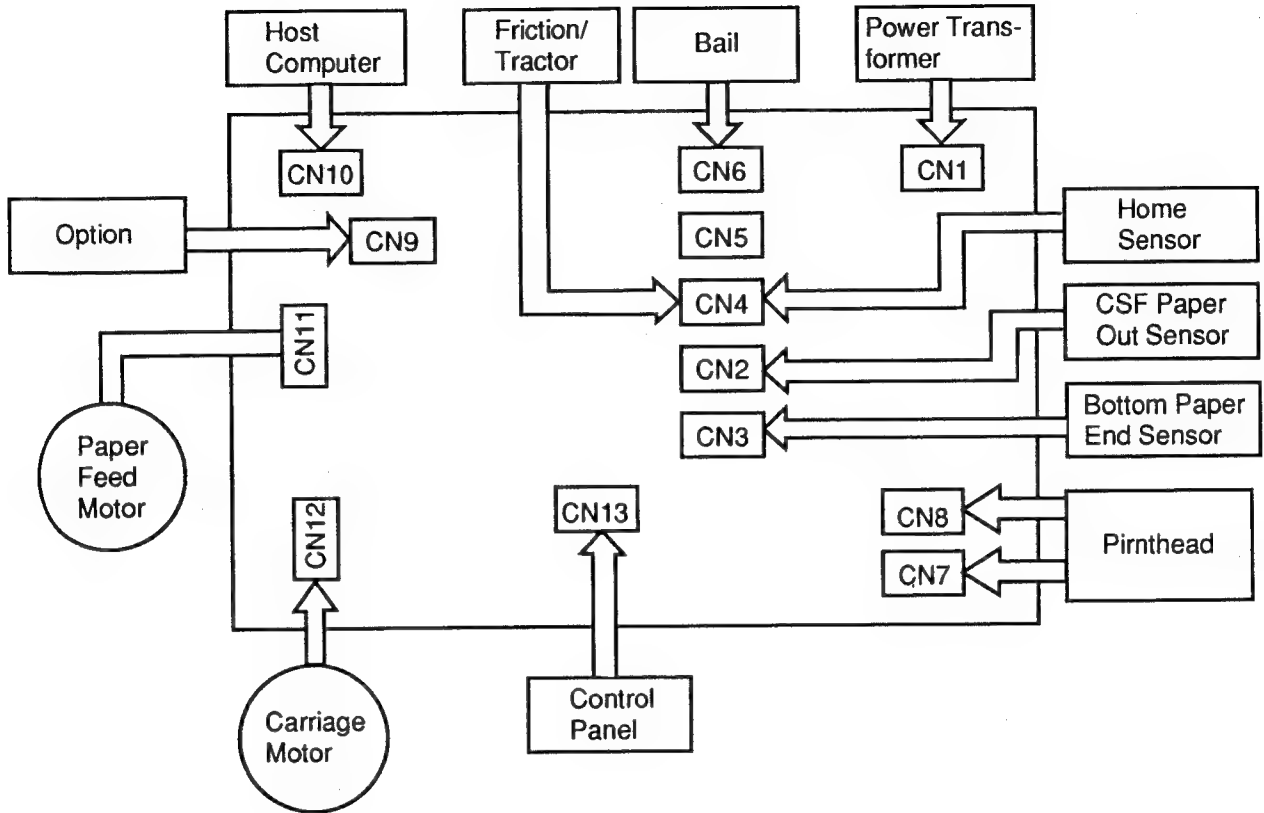
8.2.8 Control Panel

The control panel is composed of 5 switches and 12 LEDs.

- (1) The ON LINE switch switches between on-line and off-line, and is input to the CPU (pin 75). This switch is also used for continuous paper back in the function mode.
- (2) The paper feed switch is for one-line paper feed and is input to the CPU (pin 45). This switch is also used for driving the carriage to the right in the function mode.
- (3) The form feed switch is for one page-feed and is input to the CPU (pin 85). This switch is also used for driving the carriage to the left in the function mode.
- (4) The function switch switches between the function mode and the normal operation mode. In the function mode, continuous paper back function and margin sets are available.
- (5) The power/paper out LED lights when power is turned on and blinks when paper out is detected.
- (6) The ON LINE LED displays the on-line status.
- (7) Three ROW LEDs and six COLUMN LEDs display print mode by matrix.



8.2.9 Logic Board Connection Diagram



8.3 Explanation of Connectors

8.3.1 Name of Connectors

Connector applications are shown below. For details, refer to tables.

CN1	: Power Supply	CN8,304	: Printhead
CN2	: CSF Paper Out Sensor	CN9	: Option I/O
CN3	: Bottom/Rear Paper Out Sensor	CN10	: Centronics I/O
CN4	: Carriage Home Switch	CN11	: Paper Feed Motor
CN5	: Friction/Tractor Switch	CN12	: Carriage Motor
CN6	: Bail Switch	CN13,201	: Control Panel
CN7,303	: Printhead	CN301,302	: Printhead

8.3.2 Pin Assignment

CN1 (Power Supply)

Pin No.	Signal Name	Description	In/ Out
1	AC 42V	For Main Board	—
2	AC 42V	For Main Board	—
3	AC 10V	For Optional Board	—
4	AC 10V	For Optional Board	—

CN3 (Bottom/Rear Paper Out Sensor)

Pin No.	Signal Name	Description	In/ Out
1	Collector	Paper Out Sensor	In
2	Cathode	Signal Ground	—
3	Anode	+5V Supply	Out

CN5 (Friction / Tractor Switch)

Pin No.	Signal Name	Description	In/ Out
1	SW	Friction / Tractor Switch	In
2	SG	Signal Ground	—

CN12 (Carriage Motor)

Pin No.	Signal Name	Description	In/ Out
1	CRD	Phase D for Carriage Motor	In
2	SCR	Carriage Motor Power Supply	Out
3	CRC	Phase C for Carriage Motor	In
4	CRB	Phase B for Carriage Motor	In
5	SCR	Carriage Motor Power Supply	Out
6	CRA	Phase A for Carriage Motor	In

CN6 (Bail Switch)

Pin No.	Signal Name	Description	In/ Out
1	SW	Bail Switch	In
2	SG	Signal Ground	—

CN4 (Carriage Home Switch)

Pin No.	Signal Name	Description	In/ Out
1	SW	Carriage Home Switch	In
2	SG	Signal Ground	—

CN2 (CSF Paper Out Sensor)

Pin No.	Signal Name	Description	In/ Out
1	Collector	Paper Out Sensor	In
2	Cathode	Signal Ground	—
3	Anode	+5V Supply	Out

CN11 (Paper Feed Motor)

Pin No.	Signal Name	Description	In/ Out
1	LFD	Phase D for Line Feed Motor	In
2	SLF	Line Feed Motor Power Supply	Out
3	LFC	Phase C for Line Feed Motor	In
4	LFB	Phase B for Line Feed Motor	In
5	SLF	Line Feed Motor Power Supply	Out
6	LFA	Phase A for Line Feed Motor	In

CN13,CN201 (Control Panel)

Pin No.	Signal Name	Description	In/ Out
1	SG	Signal Ground	—
2	ON LINE	SET/ON LINE Switch	In
3	LF	LF/COLUMN Switch	In
4	ET	QUIET/P.CUT Switch	In
5	FF	FF/ROW Switch	In
6	+5V	+5V Supply	Out
7-18	DATA	LED DATA In	In

CN301,CN302 (Printhead)

Pin No.	Signal Name	Description	In/ Out
1	FG	Frame Ground	—
2	FG	Frame Ground	—
3	+36V	+36V for Pin 1,5,9,13,17,21	Out
4	H3	Head Pin 3 Drive	In
5	H7	Head Pin 7 Drive	In
6	+36V	+36V for Pin 1,5,9,13,17,21	Out
7	H11	Head Pin 11 Drive	In
8	H15	Head Pin 15 Drive	In
9	+36V	+36V for Pin 1,5,9,13,17,21	Out
10	H19	Head Pin 19 Drive	In
11	H23	Head Pin 23 Drive	In
12	+36V	+36V for Pin 4,8,12,16,20,24	Out
13	H22	Head Pin 22 Drive	In
14	H18	Head Pin 18 Drive	In
15	+36V	+36V for Pin 4,8,12,16,20,24	Out
16	H14	Head Pin 14 Drive	In
17	H10	Head Pin 10 Drive	In
18	+36V	+36V for Pin 4,8,12,16,20,24	Out
19	H6	Head Pin 6 Drive	In
20	H2	Head Pin 2 Drive	In
21	SG	Signal Ground	—
22	OHP	Overheat Protector	In
23	H1	Head Pin 1 Drive	In
24	H5	Head Pin 5 Drive	In
25,28,31	+36V	+36V for Pin 3,7,11,15,19,23	Out
26	H9	Head Pin 9 Drive	In
27	H13	Head Pin 13 Drive	In
29	H17	Head Pin 17 Drive	In
30	H21	Head Pin 21 Drive	In
32	H24	Head Pin 24 Drive	In
33	H20	Head Pin 20 Drive	In
34,37,40	+36V	+36V for Pin 2,6,10,14,18,22	Out
35	H16	Head Pin 16 Drive	In
38	H8	Head Pin 8 Drive	In
39	H4	Head Pin 4 Drive	In

CN7,CN303 (Printhead)

Pin No.	Signal Name	Description	In/ Out
1	OHP	Overheat Protector	In
2	SG	Signal Ground	—
3	H5	Head Pin 5 Drive	In
4	H1	Head Pin 1 Drive	In
5	H9	Head Pin 9 Drive	In
6	+36V	+36V for Pin 3,7,11,15,19,23	Out
7	+36V	+36V for Pin 3,7,11,15,19,23	Out
8	H13	Head Pin 13 Drive	In
9	H21	Head Pin 21 Drive	In
10	H17	Head Pin 17 Drive	In
11	H24	Head Pin 24 Drive	In
12	+36V	+36V for Pin 3,7,11,15,19,23	Out
13	+36V	+36V for Pin 2,6,10,14,18,22	Out
14	H20	Head Pin 20 Drive	In
15	H12	Head Pin 12 Drive	In
16	H16	Head Pin 16 Drive	In
17	H8	Head Pin 8 Drive	In
18	+36V	+36V for Pin 2,6,10,14,18,22	Out
19	+36V	+36V for Pin 2,6,10,14,18,22	Out
20	H4	Head Pin 4 Drive	In

CN8,CN304 (Printhead)

Pin No.	Signal Name	Description	In/ Out
1	FG	Frame Ground	—
2	FG	Frame Ground	—
3	H3	Head Pin 3 Drive	In
4	+36V	+36V for Pin 1,5,9,13,17,21	Out
5	+36V	+36V for Pin 1,5,9,13,17,21	Out
6	H7	Head Pin 7 Drive	In
7	H15	Head Pin 15 Drive	In
8	H11	Head Pin 11 Drive	In
9	H19	Head Pin 19 Drive	In
10	+36V	+36V for Pin 1,5,9,13,17,21	Out
11	+36V	+36V for Pin 4,8,12,16,20,24	Out
12	H23	Head Pin 23 Drive	In
13	H18	Head Pin 18 Drive	In
14	H22	Head Pin 22 Drive	In
15	H14	Head Pin 14 Drive	In
16	+36V	+36V for Pin 4,8,12,16,20,24	Out
17	+36V	+36V for Pin 4,8,12,16,20,24	Out
18	H10	Head Pin 10 Drive	In
19	H2	Head Pin 2 Drive	In
20	H6	Head Pin 6 Drive	In

CN10 (Centronics I/O)













Pin No.	Return Side Pin No.	Signal Name	Description	I/O
1	19	STB	Strobe	In
2	20	DATA 1	Parallel DATA 1	In
3	21	DATA 2	Parallel DATA 2	In
4	22	DATA 3	Parallel DATA 3	In
5	23	DATA 4	Parallel DATA 4	In
6	24	DATA 5	Parallel DATA 5	In
7	25	DATA 6	Parallel DATA 6	In
8	26	DATA 7	Parallel DATA 7	In
9	27	DATA 8	Parallel DATA 8	In
10	28	ACK	Acknowledge	Out
11	29	BUSY	Busy	Out
12		PE	Paper End	Out
13		SLCT	Select	Out
14		AFXT	Auto Feed XT	In
15		—	—	—
16		SG	Signal Ground	—
17		FG	Frame Ground	—
18		+5V	+5V	Out
31	30	PRIME	Prime	In
32		ERROR	Error	Out
33		SG	Signal Ground	—
34		—	—	—
35		—	—	—
36		—	—	—
19-30		SG	Signal Ground	—

CN 9 (Option I/O)

Pin No.	Signal Name	Description	I/O
1	AC 10V	AC 10V for Serial Option	
2	AC10V	AC 10V for Serial Option	
3	SG	Signal Ground	
4	SG	Signal Ground	
5	SIF	Check of Option Board	In
6	AFXT	Auto Feed XT	In
7	SLCT	Select	Out
8	PE	Paper End Sensor	Out
9	ERROR	Error	Out
10	BUSY	Busy	Out
11	ACK	Acknowledge	Out
12	PRIME	Prime	In
13	STB	Strobe	In
14	+5V	+5V Supply	Out
15	+5V	+5V Supply	Out
16	T x D	Transmitted Data	Out
17	DATA 8	Parallel DATA 8	In
18	DATA 7	Parallel DATA 7	In
19	DATA 6	Parallel DATA 6	In
20	DATA 5	Parallel DATA 5	In
21	DATA 4	Parallel DATA 4	In
22	DATA 3	Parallel DATA 3	In
23	DATA 2	Parallel DATA 2	In
24	DATA 1	Parallel DATA 1	In
25	RESET	Reset to Option	Out
26	SCK	Serial Clock	In
27	R x D	Received Data	In
28	—	Not Used	

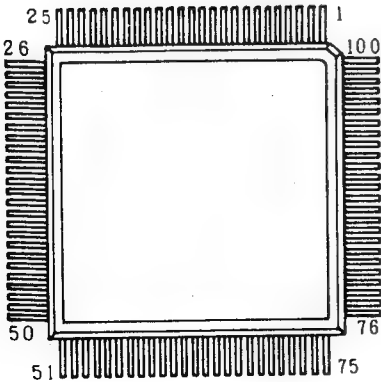
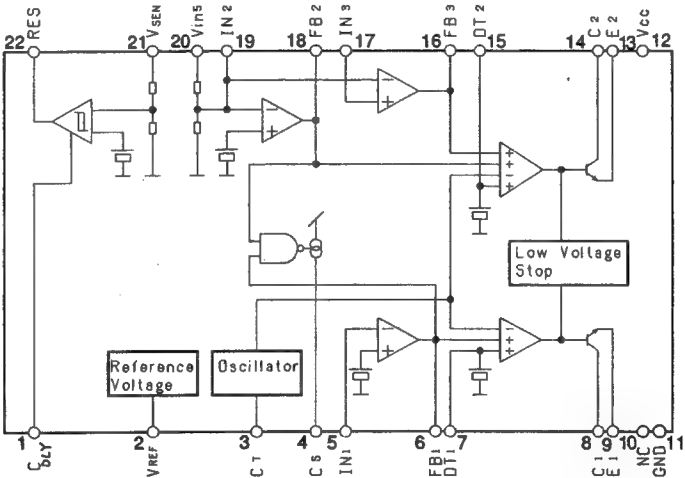
8.4 IC Pin Configuration

8.4.1 Logic Symbol Chart

Positive Logic	Negative Logic	Truth Table	Positive Logic	Negative Logic	Truth Table																														
NOT  $C = \bar{A}$	 $C = \bar{A}$	<table><tr><th>A</th><th>C</th></tr><tr><td>L</td><td>H</td></tr><tr><td>H</td><td>L</td></tr></table>	A	C	L	H	H	L	NAND  $C = \overline{AB}$	INVERT-OR  $C = \overline{A+B}$	<table><tr><th>A</th><th>B</th><th>C</th></tr><tr><td>L</td><td>L</td><td>H</td></tr><tr><td>L</td><td>H</td><td>H</td></tr><tr><td>H</td><td>L</td><td>H</td></tr><tr><td>H</td><td>H</td><td>L</td></tr></table>	A	B	C	L	L	H	L	H	H	H	L	H	H	H	L									
A	C																																		
L	H																																		
H	L																																		
A	B	C																																	
L	L	H																																	
L	H	H																																	
H	L	H																																	
H	H	L																																	
BUFFER  $C = A$	 $C = A$	<table><tr><th>A</th><th>C</th></tr><tr><td>L</td><td>L</td></tr><tr><td>H</td><td>H</td></tr></table>	A	C	L	L	H	H	OR  $C = A+B$	INVERT-NAND  $C = \overline{AB}$	<table><tr><th>A</th><th>B</th><th>C</th></tr><tr><td>L</td><td>L</td><td>L</td></tr><tr><td>L</td><td>H</td><td>H</td></tr><tr><td>H</td><td>L</td><td>H</td></tr><tr><td>H</td><td>H</td><td>H</td></tr></table>	A	B	C	L	L	L	L	H	H	H	L	H	H	H	H									
A	C																																		
L	L																																		
H	H																																		
A	B	C																																	
L	L	L																																	
L	H	H																																	
H	L	H																																	
H	H	H																																	
AND  $C = AB$	INVERT-NOR  $C = \overline{A+B}$	<table><tr><th>A</th><th>B</th><th>C</th></tr><tr><td>L</td><td>L</td><td>L</td></tr><tr><td>L</td><td>H</td><td>L</td></tr><tr><td>H</td><td>L</td><td>L</td></tr><tr><td>H</td><td>H</td><td>H</td></tr></table>	A	B	C	L	L	L	L	H	L	H	L	L	H	H	H	NOR  $C = \overline{A+B}$	INVERT-AND  $C = \overline{AB}$	<table><tr><th>A</th><th>B</th><th>C</th></tr><tr><td>L</td><td>L</td><td>H</td></tr><tr><td>L</td><td>H</td><td>L</td></tr><tr><td>H</td><td>L</td><td>L</td></tr><tr><td>H</td><td>H</td><td>L</td></tr></table>	A	B	C	L	L	H	L	H	L	H	L	L	H	H	L
A	B	C																																	
L	L	L																																	
L	H	L																																	
H	L	L																																	
H	H	H																																	
A	B	C																																	
L	L	H																																	
L	H	L																																	
H	L	L																																	
H	H	L																																	

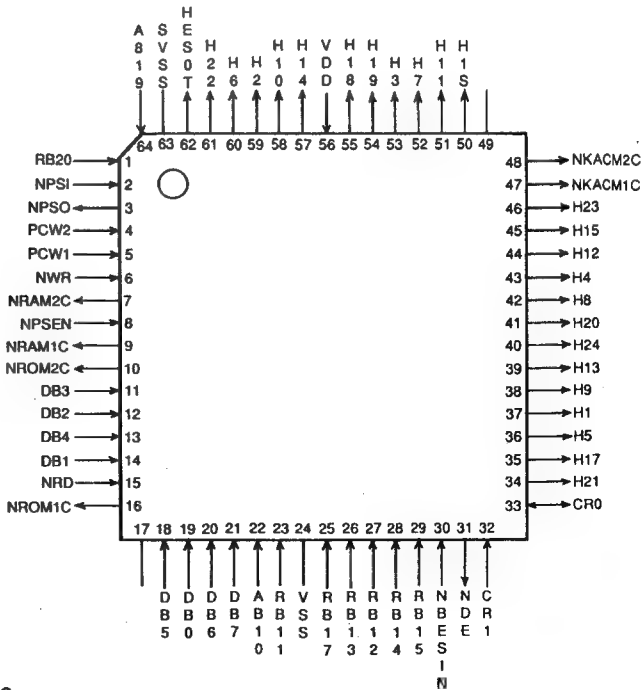
8.4.2 Pin Configuration

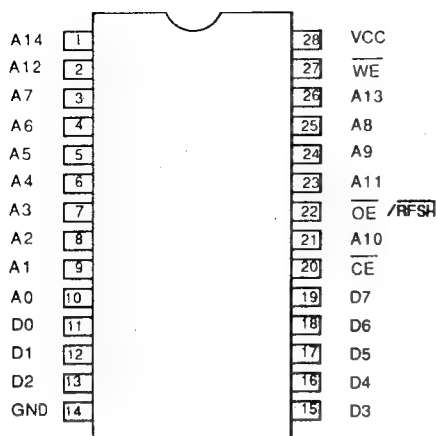
IC3 (AN8081K)



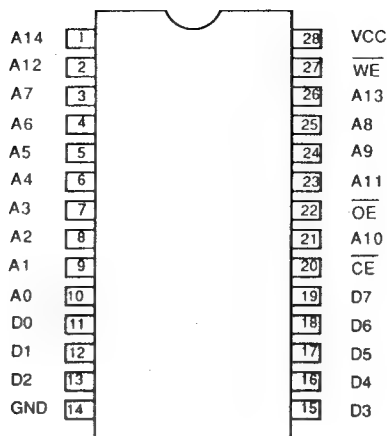
IC1 CPU
(MN18806)

IC2 Gate Array
(MN51005QPU)

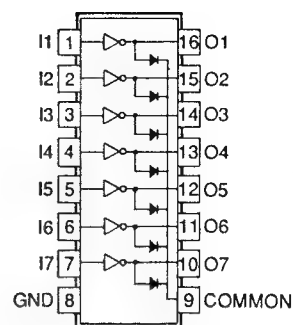




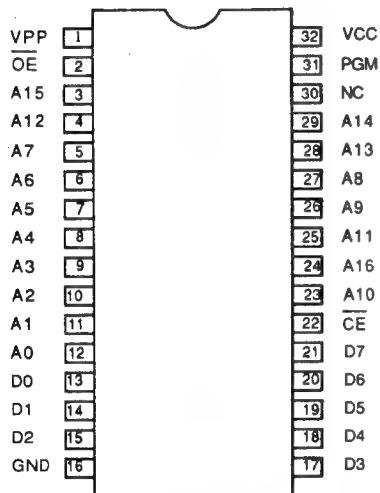
IC5 RAM
(HM65256B, TC51832)



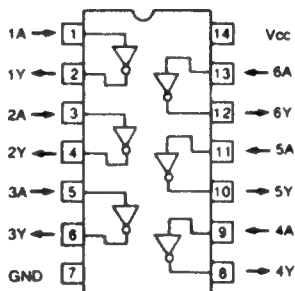
IC6
(MB84256)
Option



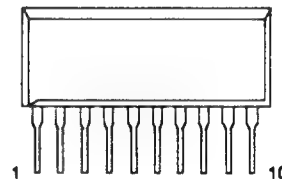
IC13
(MC1413P)



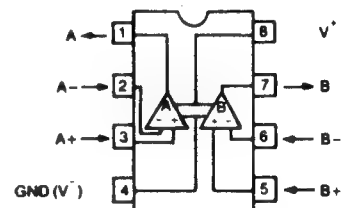
IC7 EP ROM
1M bit (HN27C101AG)



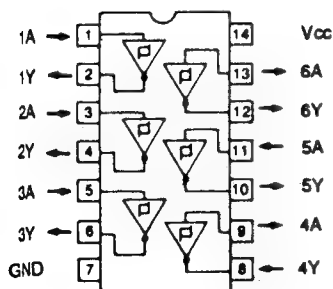
IC11
(74HC05)
IC8
(74LS06P)



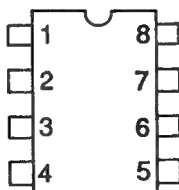
QA1-6,8
(STA401A)



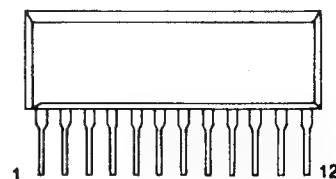
IC12
(LM393)



IC9
(74LS14P)



IC10
(24C01A/P)



QA7
(MP4301)

8.4.3 Pin Assignment

IC1 CPU (MN18806)

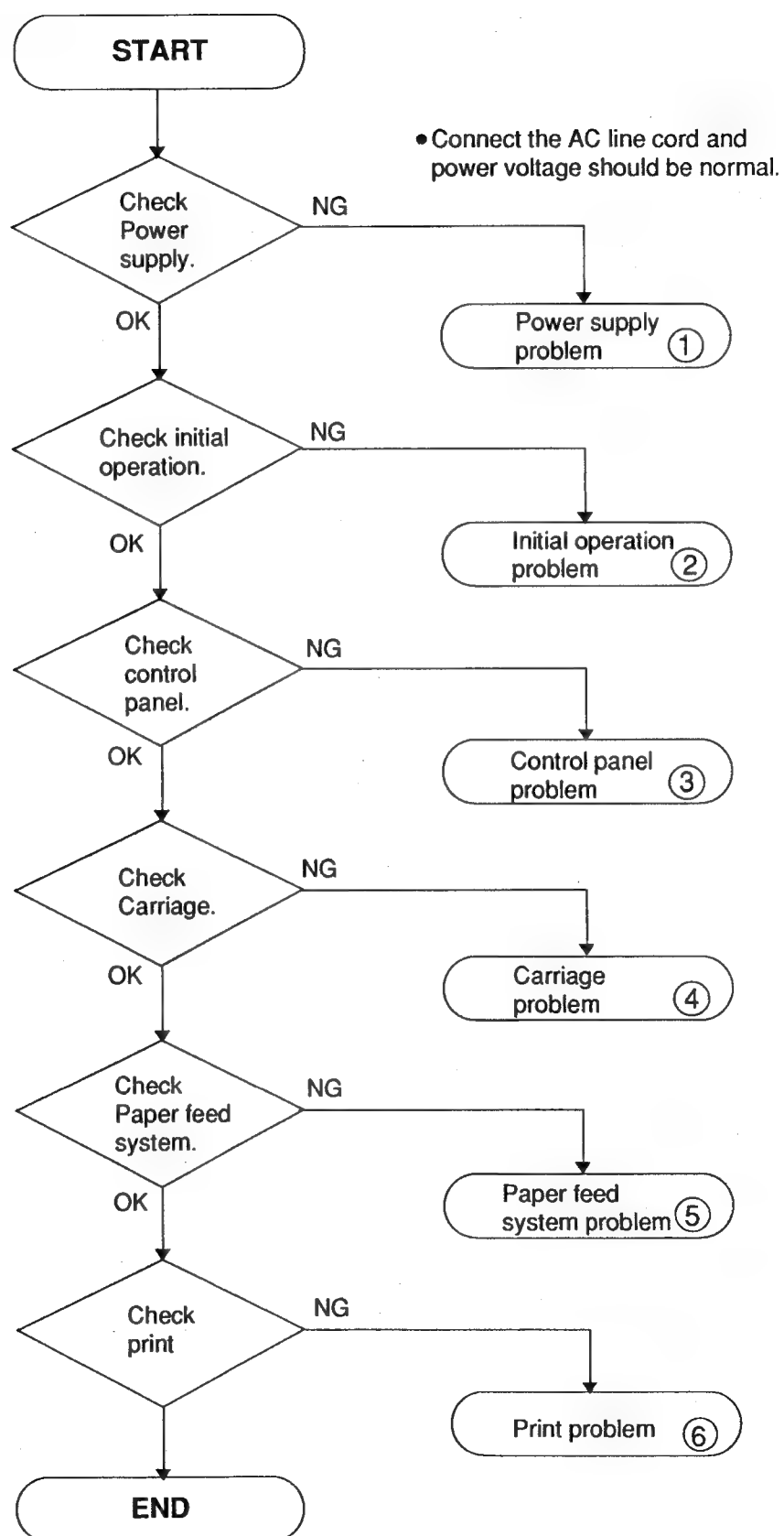
Pin No.	Symbol	Function	In/Out	Pin No.	Symbol	Function	In/Out
1	HS6	Data7	In	51	STB3	Head Print Data 5	Out
2	HS7	Data 8	In	52	STB4	Head Print Data 4	Out
3	A20	Not Used	Out	53	STB5	Head Print Data 3	Out
4	A19	Not Used	Out	54	STB6	Head Print Data 2	Out
5	A18	Not Used	Out	55	STB8	Head Print Data 1	Out
6	A17	Not Used	Out	56	STB8	Head Print Data 9	Out
7	A16	Address Bus 16 Out	Out	57	RT0	Carriage Motor A	Out
8	Vss	Ground	In	58	RT1	Carriage Motor B	Out
9	A15	Address Bus 15 Out	Out	59	RT2	Not Used	Out
10	A14	Address Bus 14 Out	Out	60	RT3	Not Used	Out
11	A12	Address Bus 12 Out	Out	61	RST	Reset In	In
12	A13	Address Bus 13 Out	Out	62	V _{DD}	+5V	In
13	A7	Address Bus 7 Out	Out	63	P40	IC201 Data	Out
14	A8	Address Bus 8 Out	Out	64	P41	IC201 Clock	Out
15	A6	Address Bus 6 Out	Out	65	P42	IC201 Load	Out
16	A9	Address Bus 9 Out	Out	66	P43	E ² P ROM CS	Out
17	A5	Address Bus 5 Out	Out	67	P30	Line Feed Motor A	Out
18	A11	Address Bus 11 Out	Out	68	P31	Line Feed Motor B	Out
19	A4	Address Bus 4 Out	Out	69	P32	LF Enable	Out
20	A3	Address Bus 3 Out	Out	70	P33	CR Enable	Out
21	A10	Address Bus 10 Out	Out	71	P34	CR Power Control 1	Out
22	A2	Address Bus 2 Out	Out	72	P35	CR Power Control 2	Out
23	A1	Address Bus 1 Out	Out	73	P36	Friction Paper End Sensor	In
24	A0	Address Bus 0 Out	Out	74	P37	Rear Paper End Sensor	In
25	D7	Data Bus 7	In/Out	75	P10	Bottom Paper End Sensor	In
26	D6	Data Bus6	In/Out	76	P11	LF Switch	In
27	D0	Data Bus 0	In/Out	77	P12	ON LINE Switch	In
28	D5	Data Bua5	In/Out	78	P13	SELECT	Out
29	D1	Data Bus1	In/Out	79	P14	PE	Out
30	D4	Data Bus 4	In/Out	80	P15	ERROR	Out
31	D2	Data Bus2	In/Out	81	P16	AFXT	In
32	D3	Data Bus 3	In/Out	82	P17	SIF	In
33	V _{DD}	+5V	In	83	Vss	Ground	In
34	PSEN	Program Store Enable	Out	84	ADC0	Overheat Protector	In
35	RE	Read Enable	Out	85	ADC1	ROW/COLUMN/SET Switch	In
36	WE	Write Enable	Out	86	ADC2	FUNCTION/Bail Switch	In
37	P20	FF Switch	In	87	ADC3	Friction/Tractor Switch	In
38	TCIO1	Head Power	Out	88	V _{DD}	+5V	In
39	TCIO2	Buzzer Out	Out	89	TXD	TXD	Out
40	P23	Home Sensor	In	90	RXD	RXD	In
41	Vss	Ground	In	91	TRXC	Serial Clock	In
42	OSC1	OSC In	In	92	HSBSY	Busy to Host	Out
43	OSC2	OSC Out	Out	93	HSACK	ACK to Host	Out
44	IRQ0	Prime		94	HSSTB	STB from Host	In
45	IRQ1	Overload Sensor	In	95	HS0	Data 1	In
46	IRQ2	Cover Switch	In	96	HS1	Data 2	In
47	P27	E ² P ROM Data Out	In	97	HS2	Data 3	In
48	STB0	Head Print Data 8/E ² P ROM Data In	Out	98	HS3	Data 4	In
49	STB1	Head Print Data 7/E ² P ROM CLK	Out	99	HS4	Data 5	In
50	STB2	Head Print Data 6		100	HS5	Data 6	In

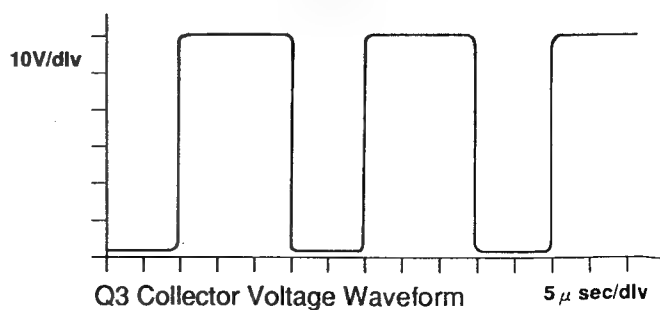
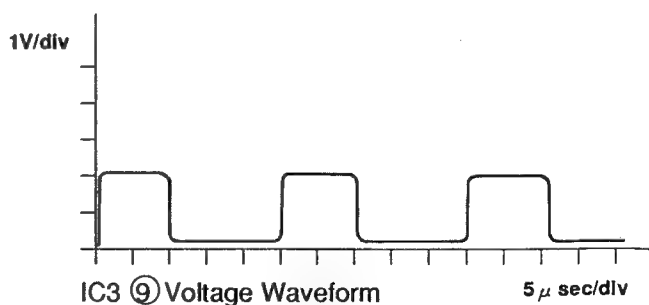
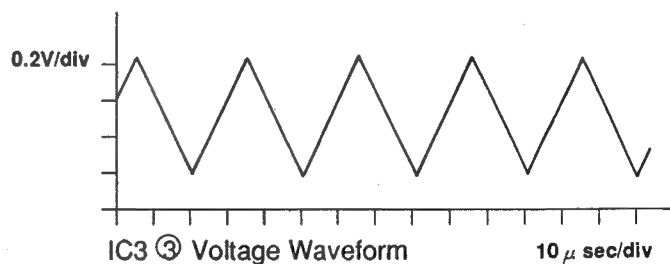
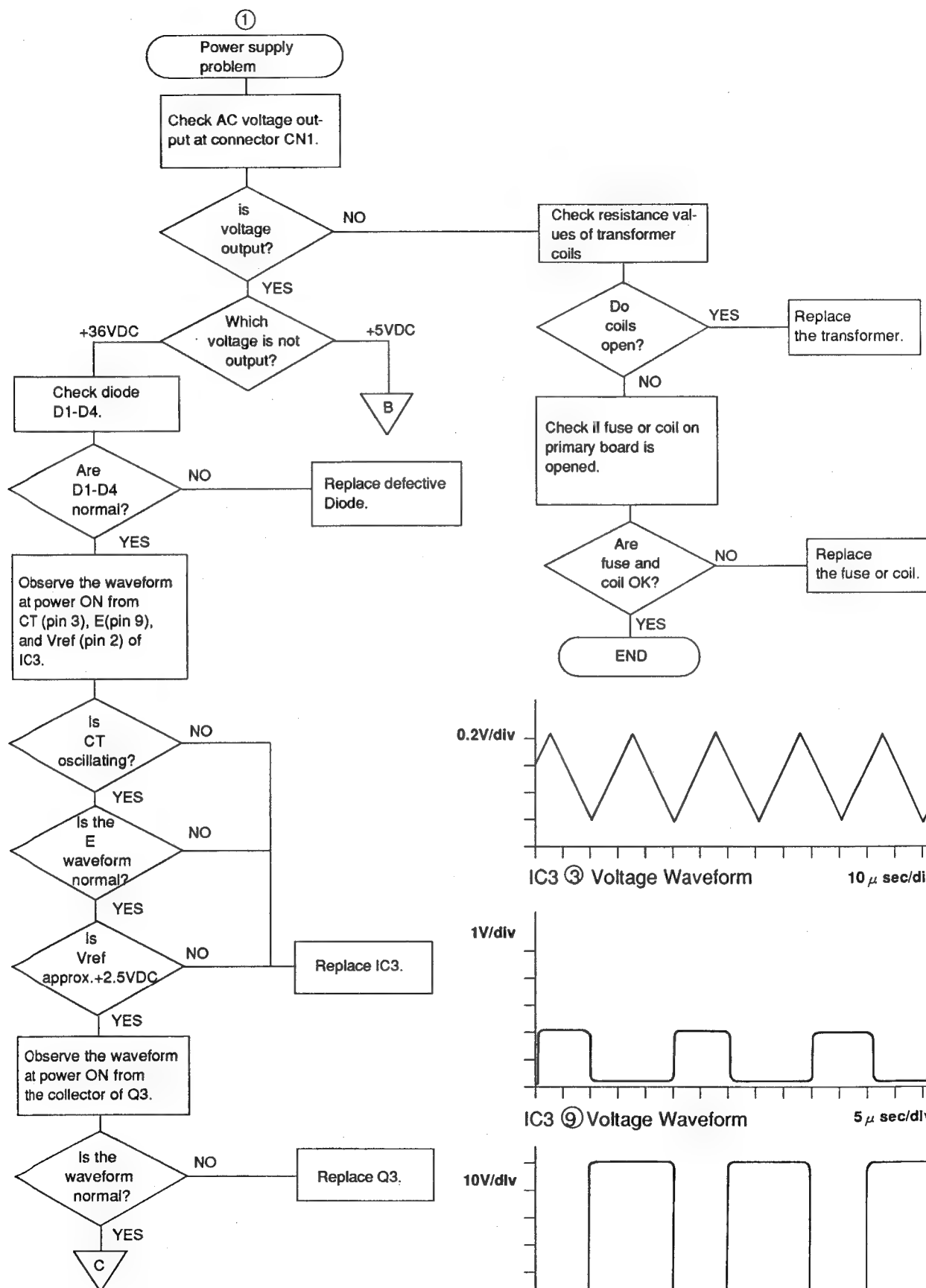
IC2 (Gate Array)

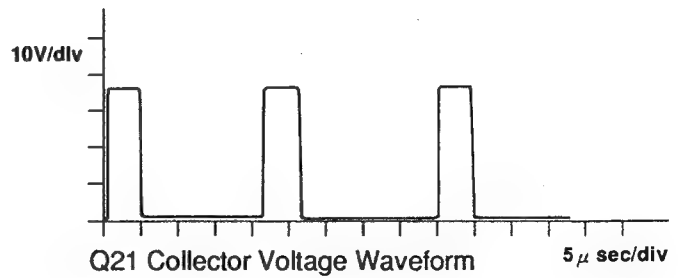
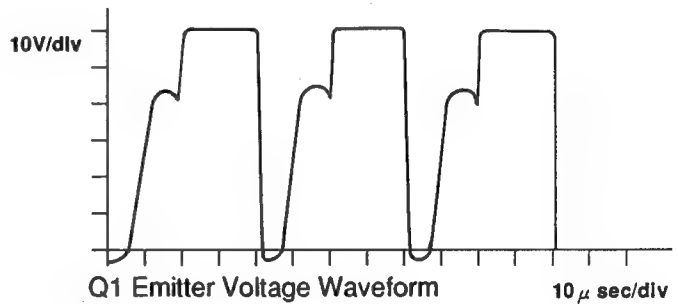
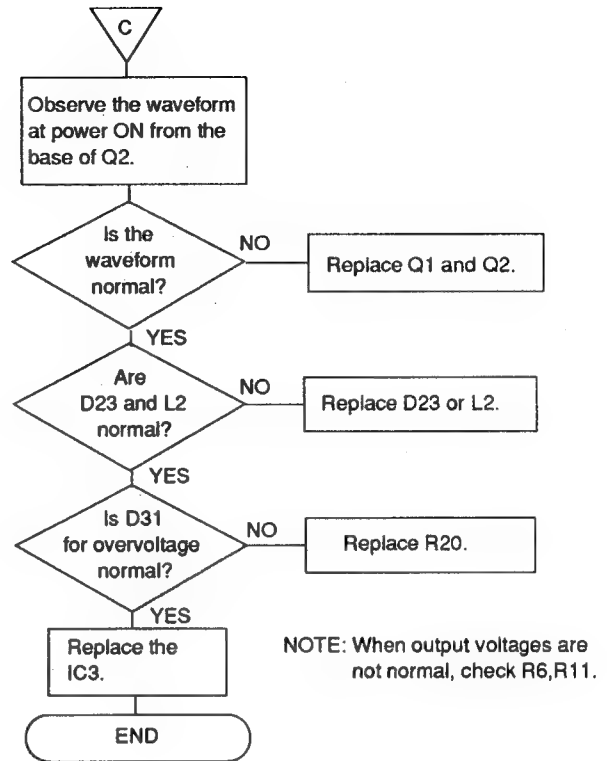
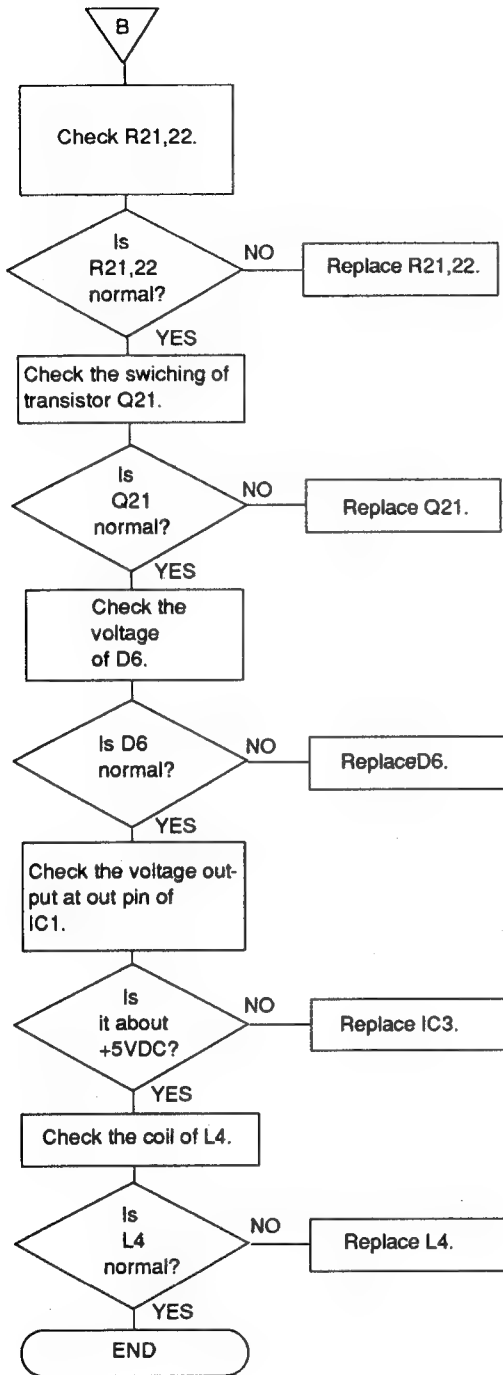
Pin No.	Symbol	Function	In/ Out
1	AB20	Address Bus 20	In
2	PSI	Pseud In	In
3	PSO	Pseud Out	Out
4	POW2	Power 2	In
5	POW1	Power 1	In
6	WR	Write	Out
7	RAM2C	RAM2 Chip Enable	Out
8	PSEN	PSEN	In
9	RAM1C	RAM1 Chip Enable	Out
10	ROM2C	ROM2 Chip Enable	Out
11	DB3	Data Bus 3	In
12	DB2	Data Bus 2	In
13	DB4	Data Bus 4	In
14	DB1	Data Bus 1	In
15	RD	Read	Out
16	ROM1C	ROM1 Chip Enable	Out
17	NC	No Connection	—
18	DB5	Data Bus 5	In
19	DB0	Data Bus 0	In
20	DB6	Data Bus 6	In
21	DB7	Data Bus 7	In
22	AB10	Address Bus 10	In
23	AB11	Address Bus 11	In
24	Vss	Ground	—
25	AB17	Address Bus 17	In
26	AB13	Address Bus 13	In
27	AB12	Address Bus 12	In
28	AB14	Address Bus 14	In
29	AB15	Address Bus 15	In
30	RESIN	Reset In	In
31	OE	Output Enable	Out
32	CRI	CR In	In

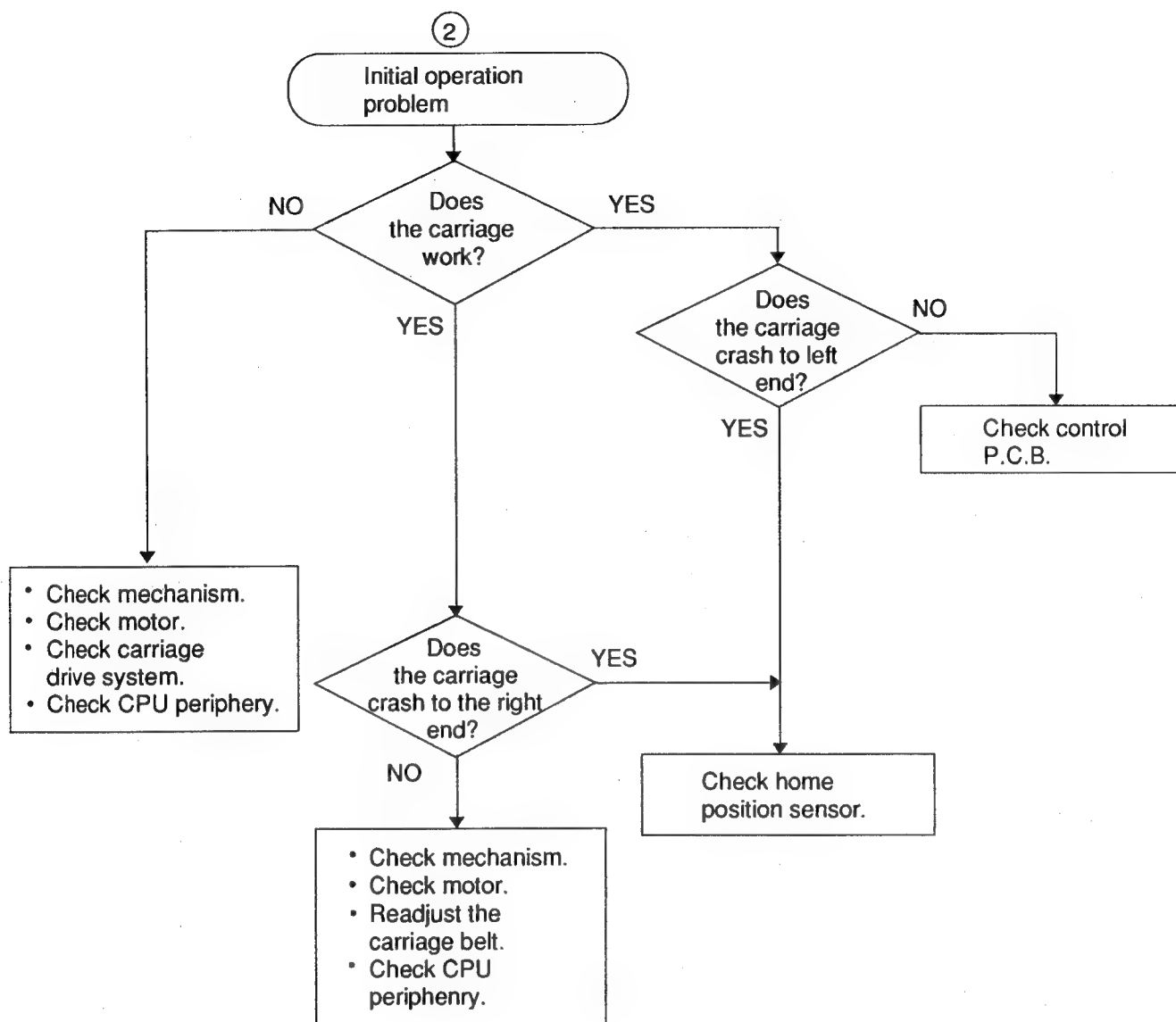
Pin No.	Symbol	Function	In/ Out
33	CRO	CR Out	Out
34	H21	Head Pin 21	Out
35	H17	Head Pin 17	Out
36	H5	Head Pin 5	Out
37	H1	Head Pin 1	Out
38	H9	Head Pin 9	Out
39	H13	Head Pin 13	Out
40	H24	Head Pin 24	Out
41	H20	Head Pin 20	Out
42	H8	Head Pin 8	Out
43	H4	Head Pin 4	Out
44	H12	Head Pin 12	Out
45	H16	Head Pin 16	Out
46	H23	Head Pin 23	Out
47	NC	No Connection	—
48	NC	No Connection	—
49	NC	No Connection	Out
50	H15	Head Pin 15	Out
51	H11	Head Pin 11	Out
52	H7	Head Pin 7	Out
53	H3	Head Pin 3	Out
54	H19	Head Pin 19	Out
55	H18	Head Pin 18	Out
56	VDD	+5V	—
57	H14	Head Pin 14	Out
58	H10	Head Pin 10	Out
59	H2	Head Pin 2	Out
60	H6	Head Pin 6	Out
61	H22	Head Pin 22	Out
62	RESO	Reset Out	Out
63	Vss	Ground	—
64	AB19	Address Bus 19	In

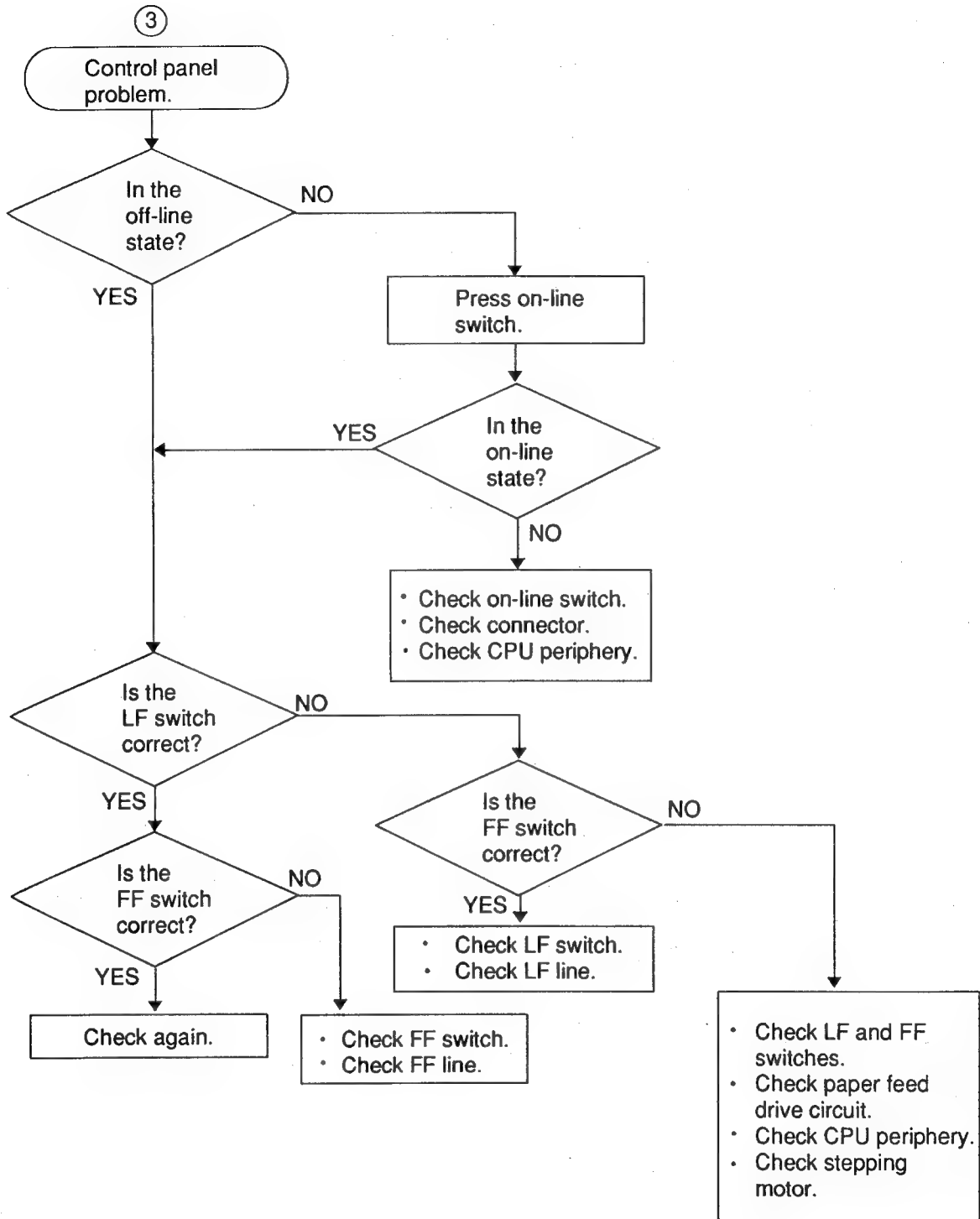
8.5 Trouble Shooting Flow Chart

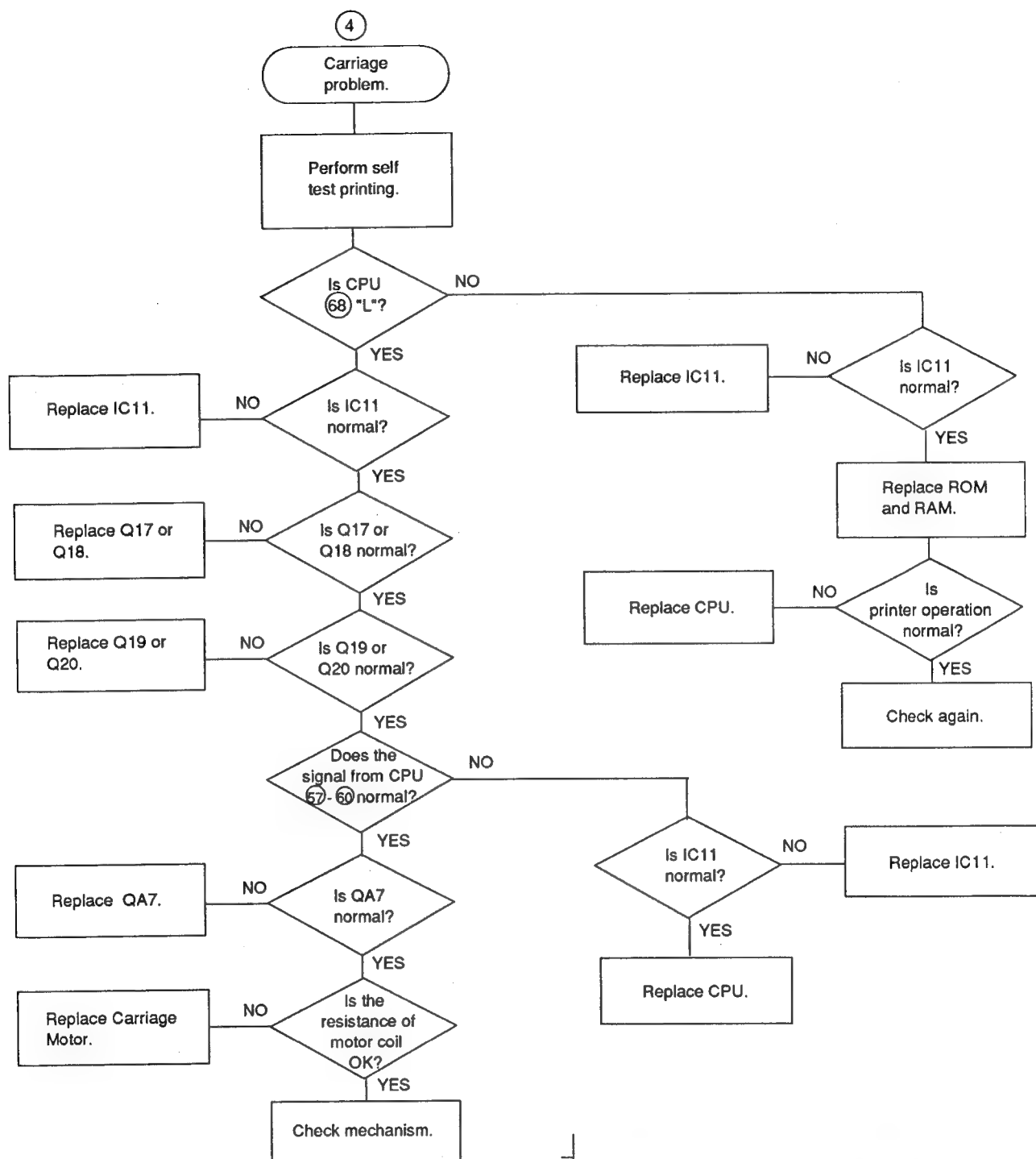




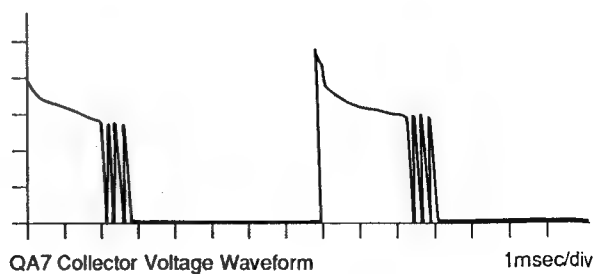


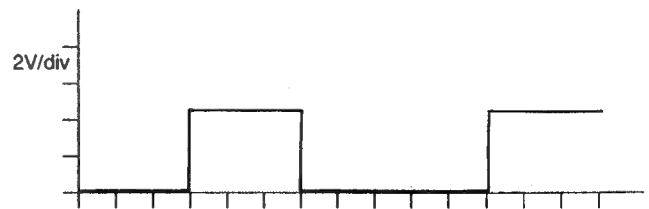
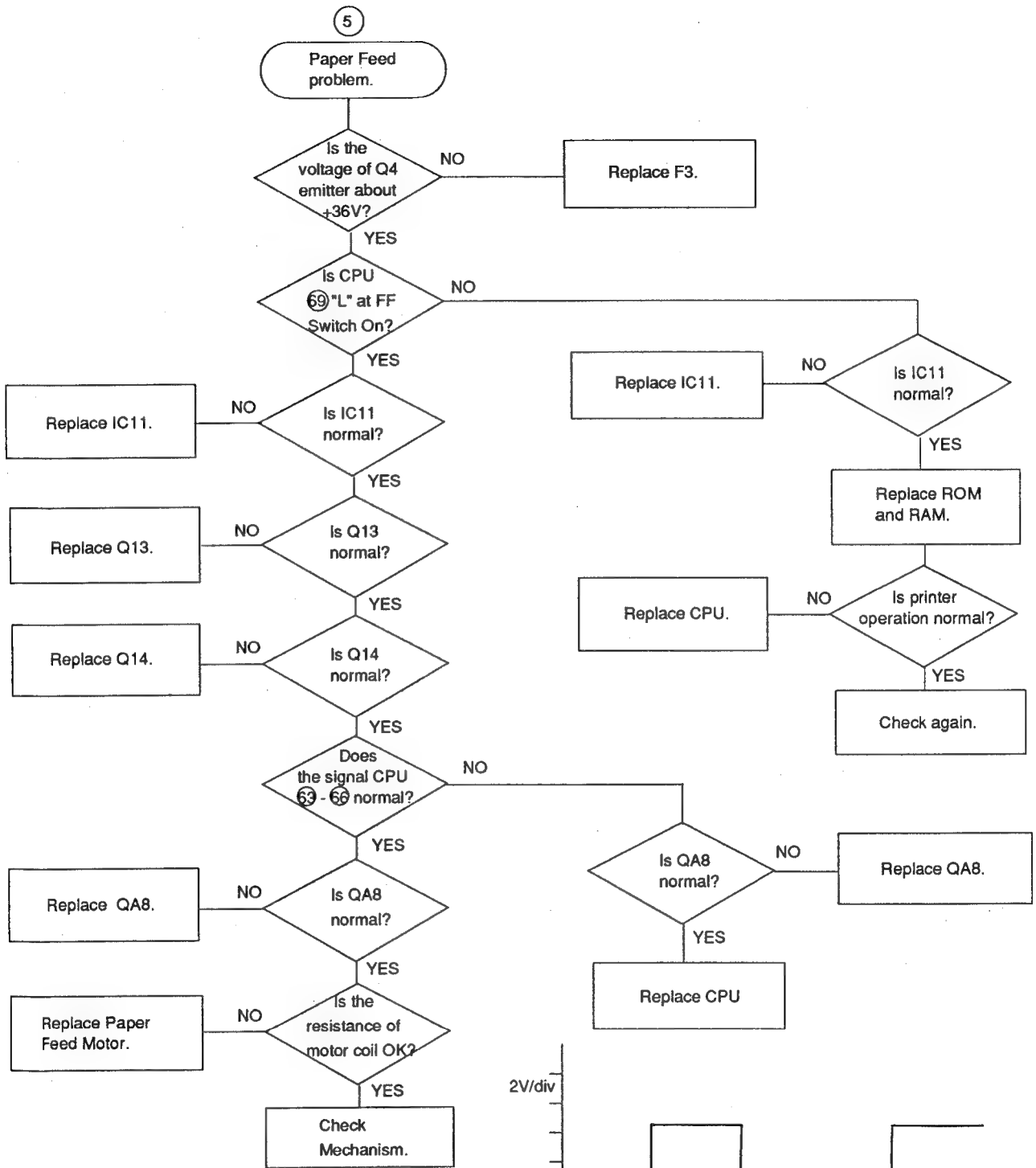




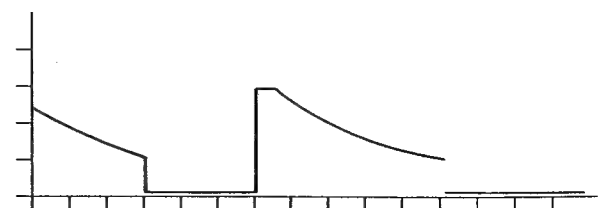


20V/div

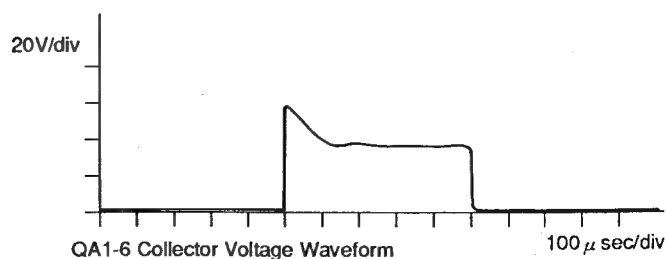
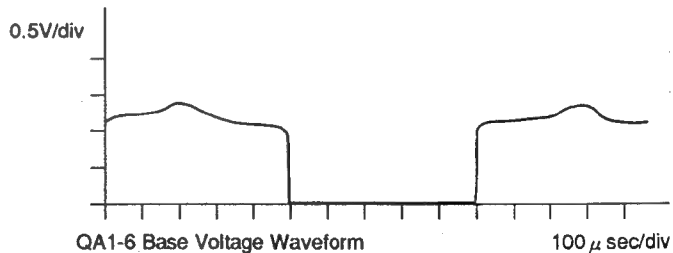
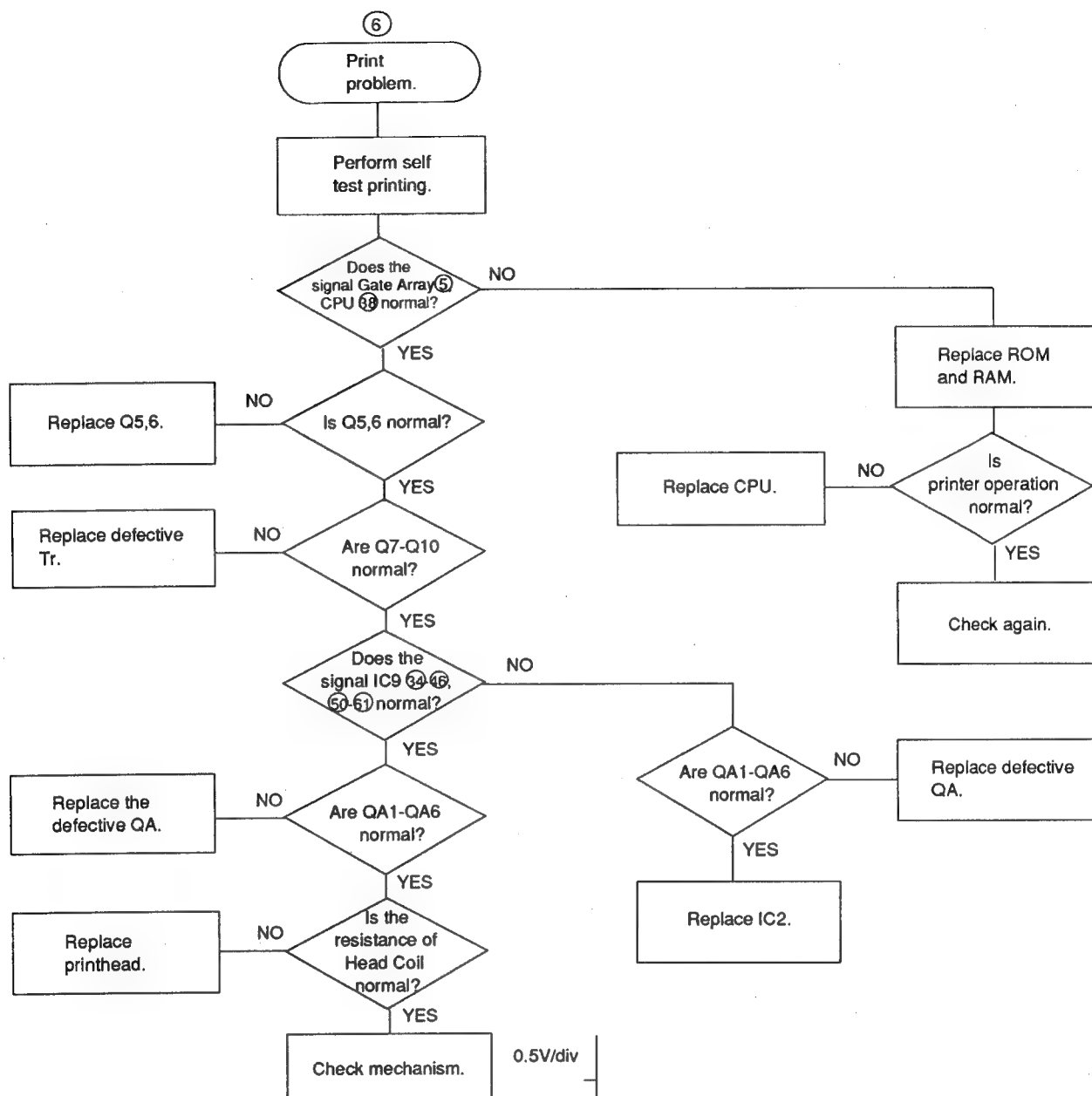




Phase Signal Voltage Waveform

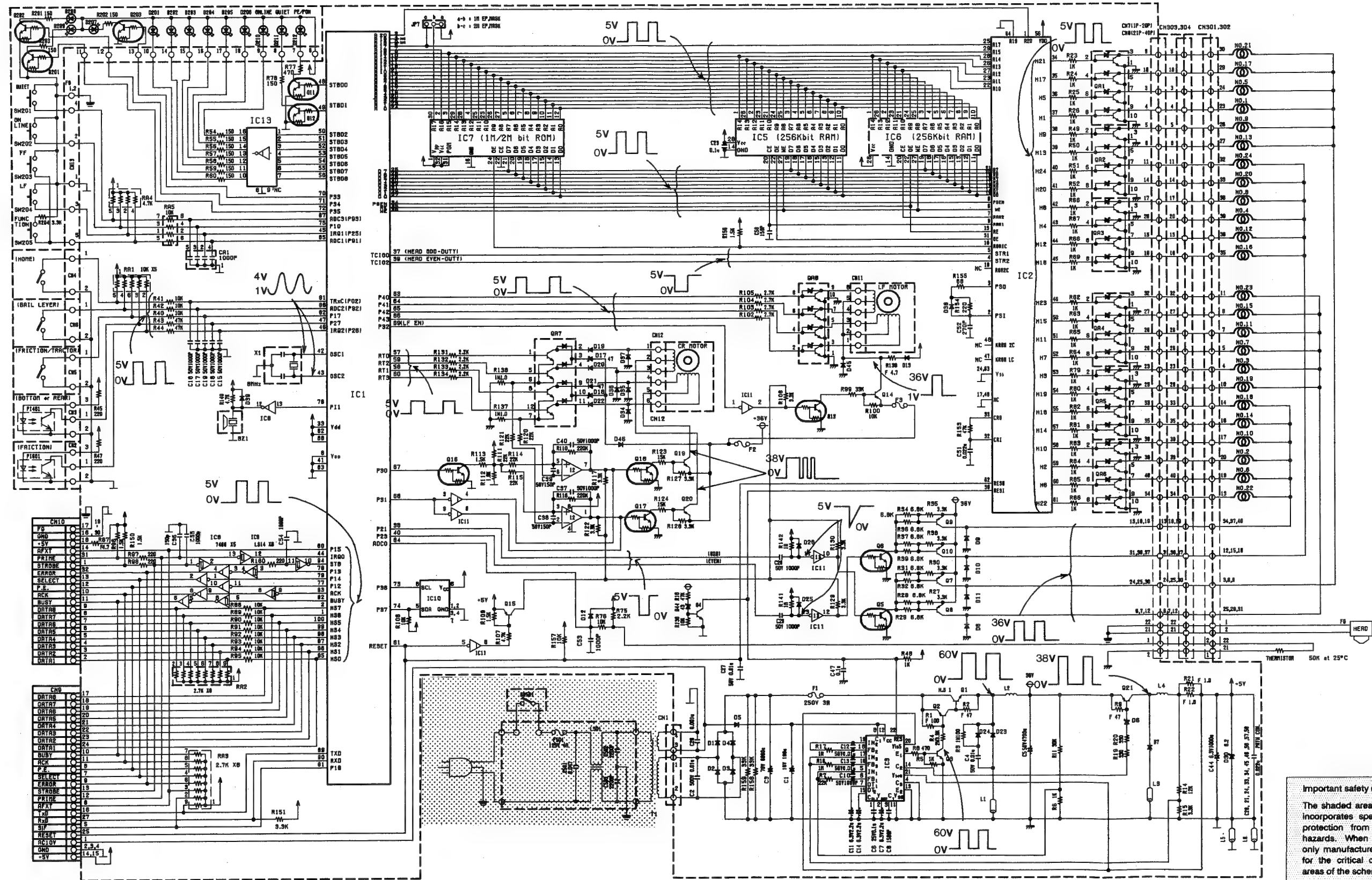


QA8 Collector Voltage Waveform



8.6 Schematic Diagram

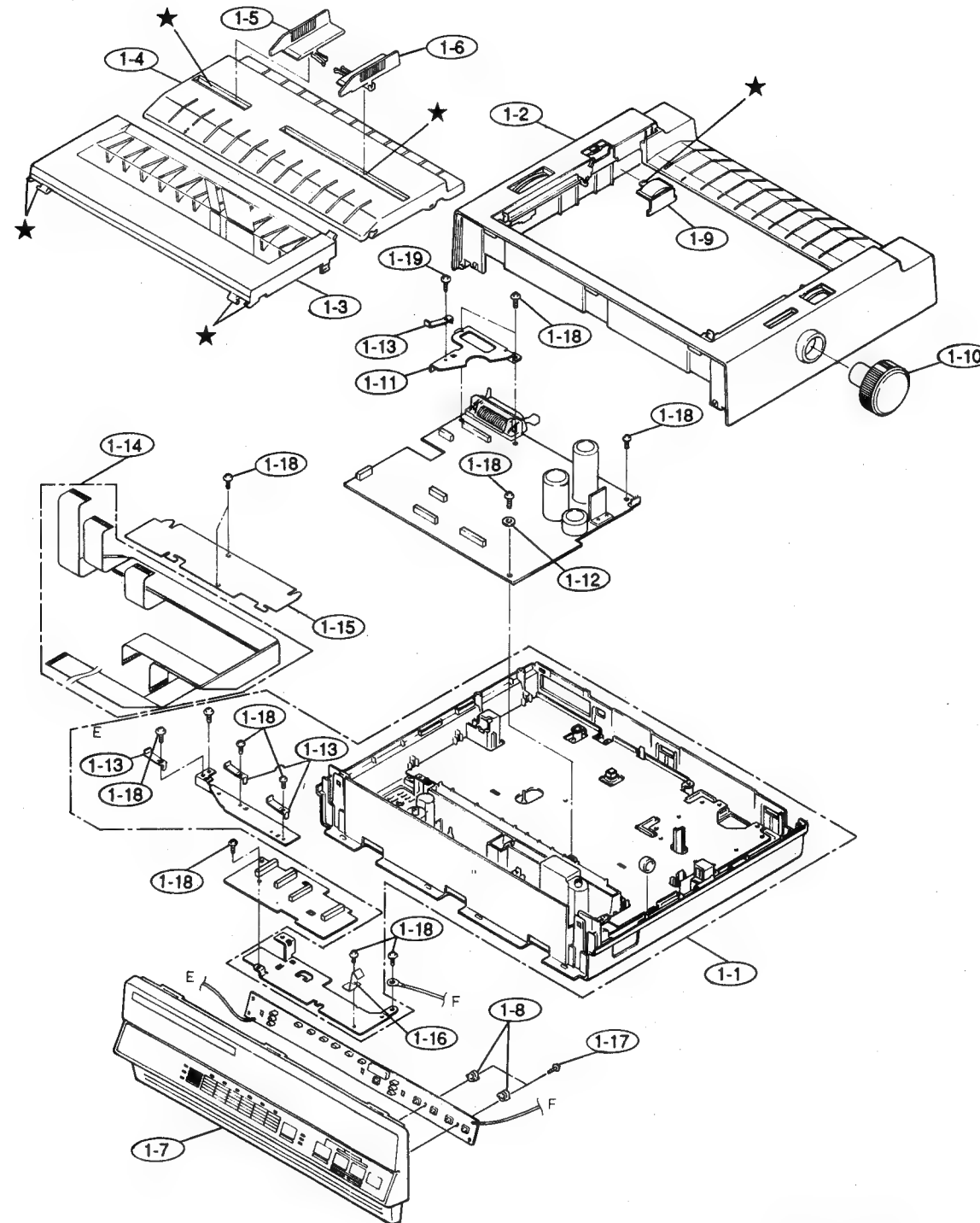
[Main Board]



9. Parts List and Lubrication

- Notes: 1. Important safety notice.
Components identified by ★ mark have special characteristics important for safety.
When replacing any of these components, use only manufacture's specified parts.
2. The S mark is for service standard parts and may differ from production parts.

9.1 Cabinet



=Lubrication=
★ PJOL-PG671

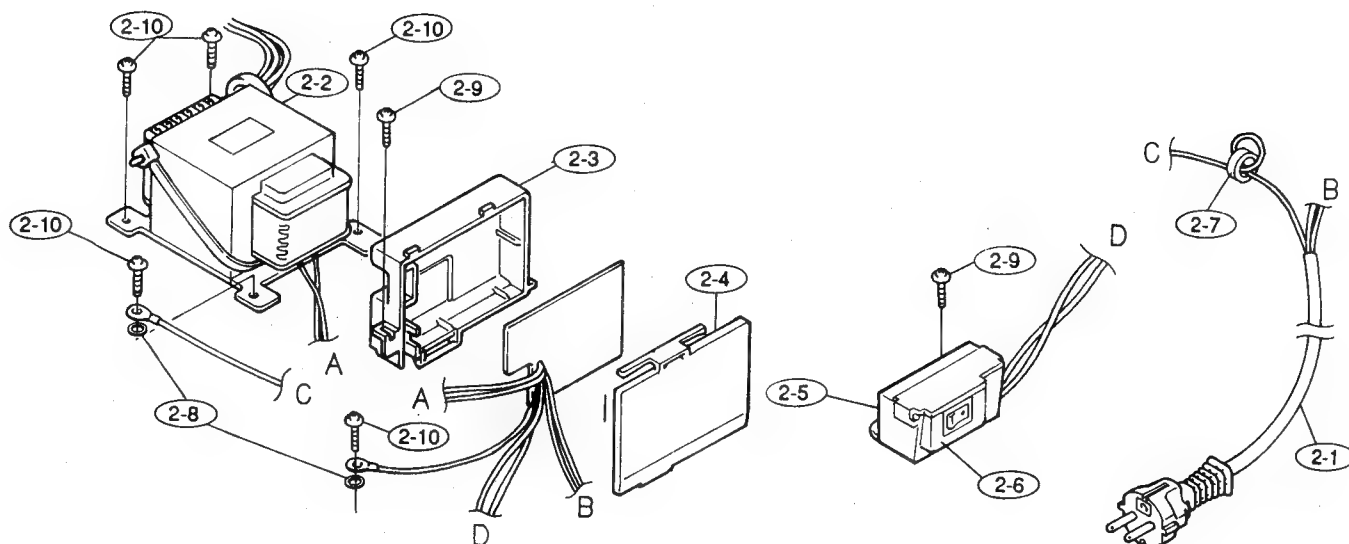
(Cabinet)

[] : COUNTRY CODE

Ref.No.	Parts No.	Parts Name and Description	Per Set	Remarks
1-1	PJYMP1123U	Lower Cabinet Assembly	1	
1-1	PJYMP1123F	Lower Cabinet Assembly [F] [I] [O] [V]	1	
1-1	PJYMP1123SP	Lower Cabinet Assembly [SP]	1	
1-2	PJYFP1123U	Upper Cabinet Assembly	1	
1-3	PJYK2P1123U	Smoked Plastic Cover	1	
1-3	PJYK2P1123F	Smoked Plastic Cover [F]	1	
1-3	PJYK2P1123I	Smoked Plastic Cover [I]	1	
1-3	PJYK2P1123O	Smoked Plastic Cover [O]	1	
1-3	PJYK2P1123V	Smoked Plastic Cover [V]	1	
1-3	PJYK2P1123SP	Smoked Plastic Cover [SP]	1	
1-4	PJJK94Z	Top Cover	1	
1-5	PJUG106Z	Paper Guide (L)	1	
1-6	PJUG105Z	Paper Guide (R)	1	
1-7	PJYK1P1123U	Front Panel Assembly	1	
1-8	PJHR9365Z	Sheet Switch Spacer	2	
1-9	PJKE80Z-3	Gear Cover	1	
1-10	PJBN25Z-3	Platen Knob	1	
1-11	PJMC137Z	Shield Plate	1	
1-12	PJNW321Z	Washer	1	
1-13	PJUS3Z	GND Spring	1	
1-14	PJWWP1123U	Flat Cable Assembly	1	
1-15	PJMC138Z	Shield Sheet	1	
1-16	PJUS101Z	GND Spring	1	
1-17	XTW3+14F	Screw 3x14 mm	2	
1-18	XTW3+8L	Screw 3x8 mm	14	
1-19	XTW3+6L	Screw 3x6 mm	1	

COUNTRY CODE	COUNTRY	COUNTRY CODE	COUNTRY
[F]	FRANCE	[SP]	SPAIN
[I]	ITALY	[V]	BELGIUM
[O]	HOLLAND		

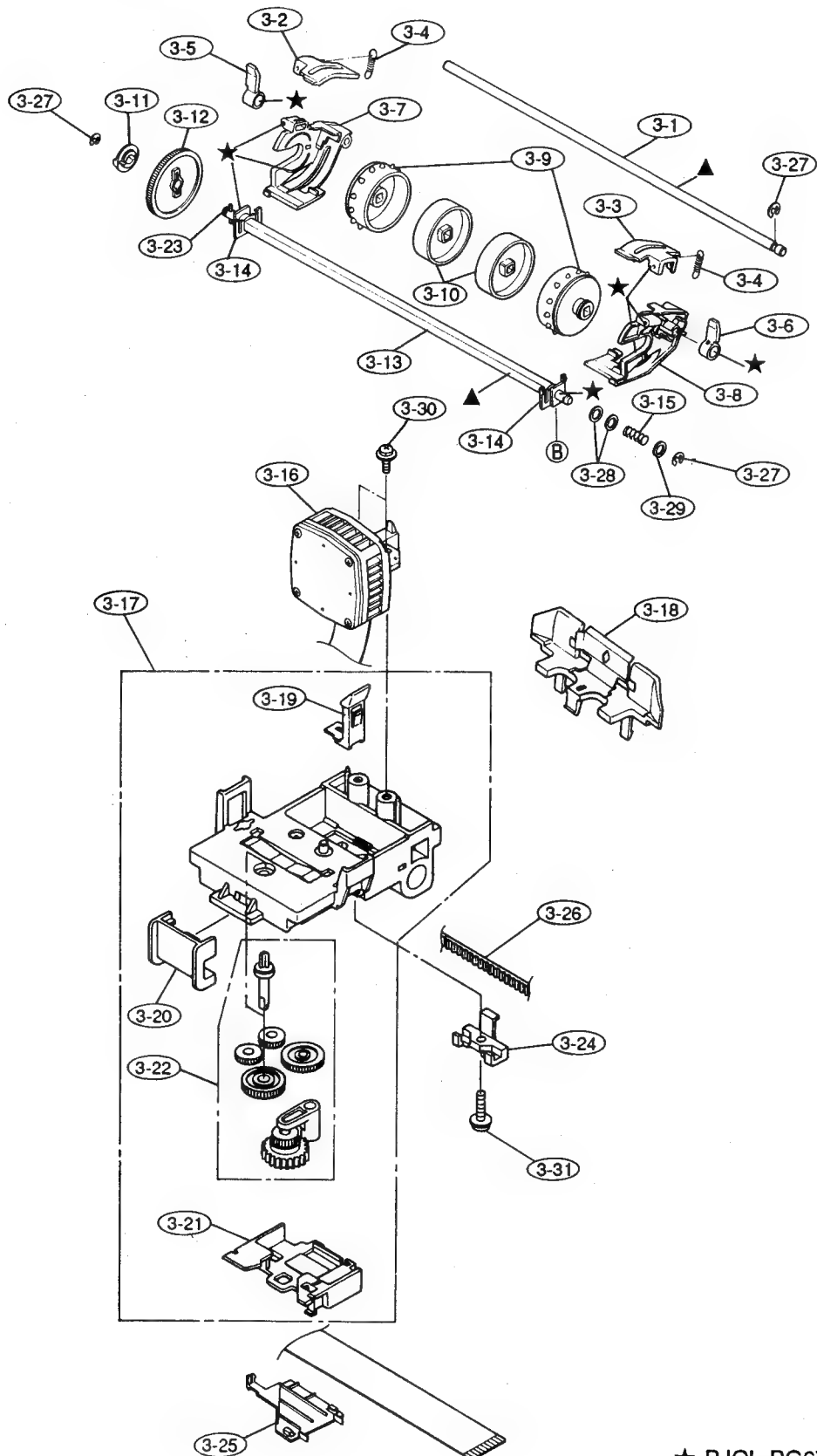
9.2 Power Supply



[] : COUNTRY CODE

Ref.No.	Parts No.	Parts Name and Description	Per Set	Remarks
2-1	PJWAXP1595U	AC Cord Assembly	1	⚠
2-1	PJWAXP1595B	AC Cord Assembly [F] [I] [O] [V] [SP]	1	⚠
2-2	PJWTP1123U	Power Transformer	1	⚠
2-2	PJWTP1123G	Power Transformer [F] [I] [O] [V] [SP]	1	⚠
2-3	PJMX48Z	Fuse Enclosure Base	1	
2-4	PJMX49Z	Fuse Enclosure Cover	1	
2-5	PJMX46Z-3	Switch Enclosure Base	1	
2-6	PJMX47Z-3	Switch Enclosure Cover	1	
2-7	PJJN9Z	ES Core	1	
2-8	XWC4B	Washer	2	
2-9	XTW3+14F	Screw 3x14mm	1	
2-10	XTW4+8L	Screw 4x8mm	6	
SW501	EST2011B	Power Switch	1	⚠
F501	XBA2C16TBO	Fuse 1.6A, 250V	1	⚠
C501	ECQE2A473HW	125V 2200P Ceramic	1	⚠
C502,503	ECKDKC222MF2	Power Switch	2	⚠
L501	PJLQS102	Coil	1	⚠

9.3 Tractor and Carriage



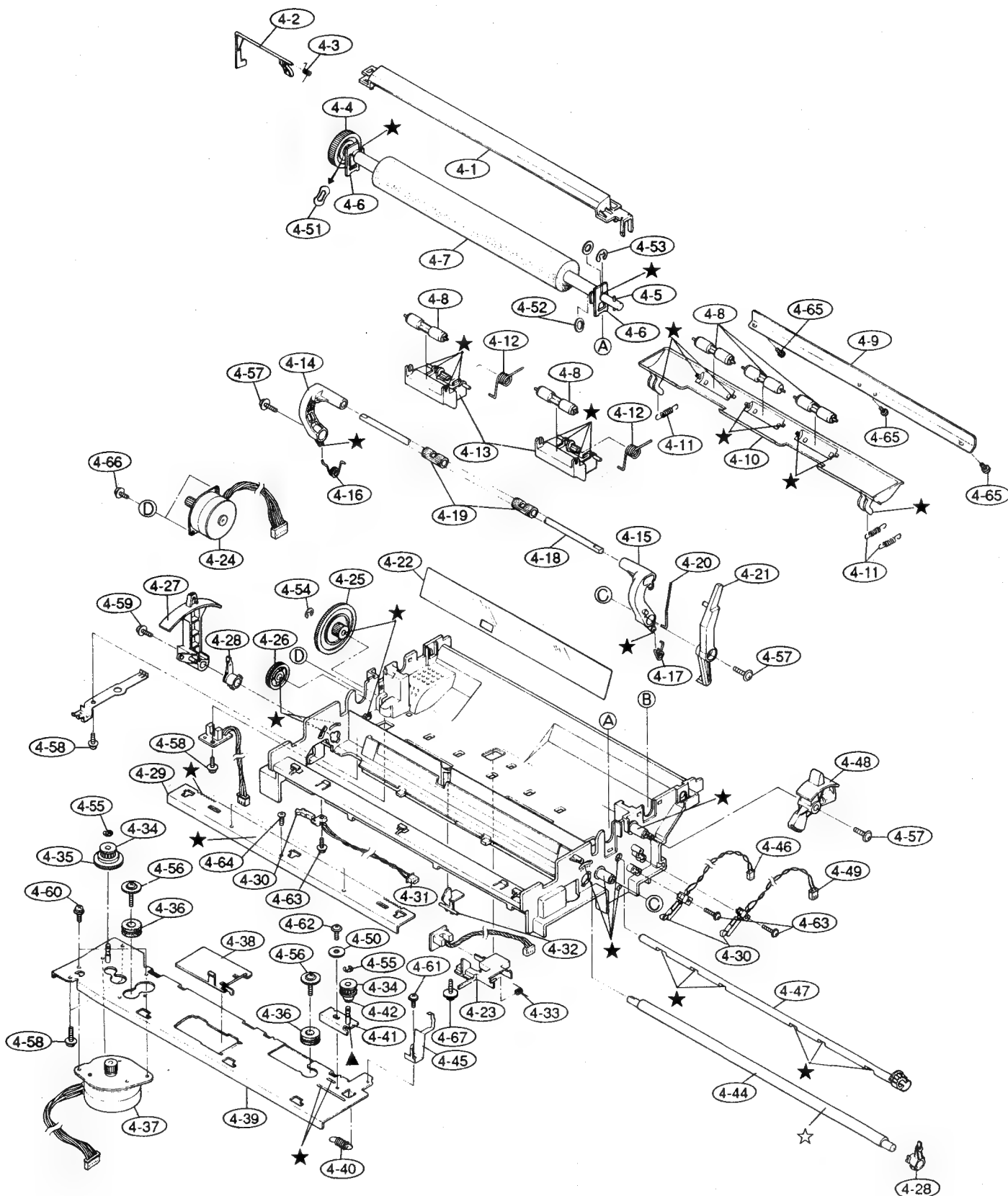
★ PJOL-PG671
▲ PJOL-K1879

(Tractor and Carriage)

[] : COUNTRY CODE

Ref.No.	Parts No.	Parts Name and Description	Per Set	Remarks
3-1	PJDF340Z	Tractor Guide Shaft	1	
3-2	PJDT87Z	Tractor Cover (L)	1	
3-3	PJDT88Z	Tractor Cover (R)	1	
3-4	PJDS3101Z	Spring	2	
3-5	PJDT89Z	Lock Lever (L)	1	
3-6	PJDT90Z	Lock Lever (R)	1	
3-7	PJDT111Z	Tractor Base (L)	1	
3-8	PJDT112Z	Tractor Base (R)	1	
3-9	PJDT91Z	Pin Wheel	2	
3-10	PJDT92Z	Paper Support	2	
3-11	PJDG5096Z	Clutch Gear	1	
3-12	PJDG5095Z	Tractor Gear	1	
3-13	PJDF339Z	Tractor Drive Shaft	1	
3-14	PJDJ06079RZ	Tractor Bushing	2	
3-15	PJDS5126Z	Spring	1	
3-16	PJWHP1123U	Head Assembly	1	
3-16	PJWHP1123F	Head Assembly [F]	1	
3-16	PJWHP1123SP	Head Assembly [SP]	1	
3-17	PJZCP1123U	Carriage Assembly	1	
3-18	PJZU3P1123M	Ribbon Mask Assembly	1	
3-19	PJME15Z	Cassette Lever	1	
3-20	PJHR9164Z	Rear Side Guide	1	
3-21	PJME101Z	Ribbon Feed Gear Cover	1	
3-22	PJZG1P1180M	Gear Kit	1	
3-23	XPL2A10WW	Pin	1	
3-24	PJME103Z	Timing Belt Clamp	1	
3-25	PJME118Z	Cable Clamp	1	
3-26	PJDV24Z	Timing Belt	1	
3-27	XUC4FY	E-ring	3	
3-28	XWE6	Washer	2	
3-29	XWG6E10	Plastic Washer	1	
3-30	XYN3+F8	Screw 3x8 mm	2	
3-31	XTW3+10F	Screw 3x10 mm	1	

9.4 Chassis



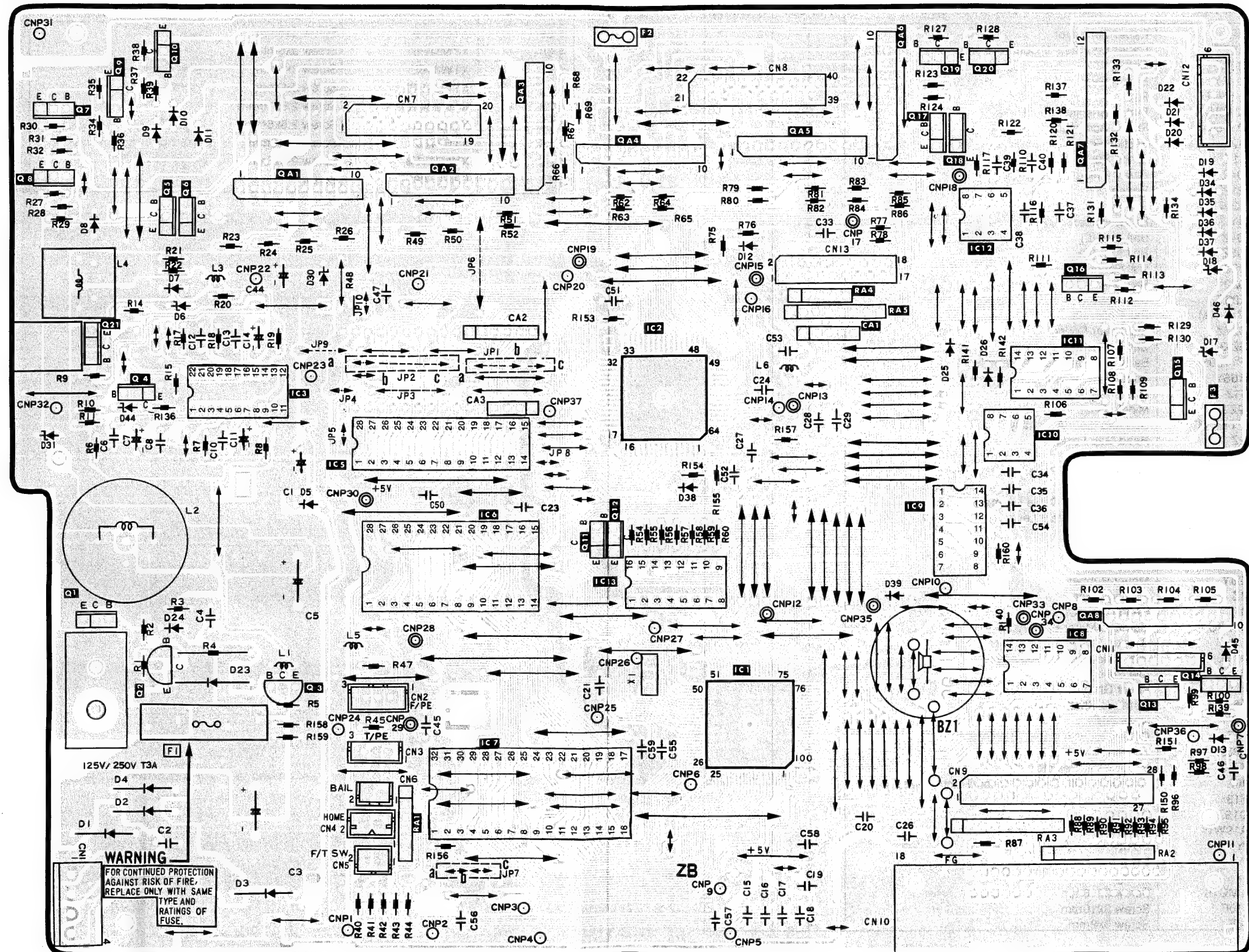
- ★ PJOL-PG671
- ▲ PJOL-K1879
- ☆ PJOL-G948P

(Chassis)

Ref.No.	Parts No.	Parts Name and Description	Per Set	Remarks
4-1	PJUG74Z	Paper Separator	1	
4-2	PJHR9167Z	Paper End Sensor Contact Lever	1	
4-3	PJDS7026Z	Spring	1	
4-4	PJDG5091Y	Platen Gear	1	
4-5	XPL2A14WFP	Pin	2	
4-6	PJDJ08309RZ	Platen Bushing	2	
4-7	PJZR1P1180M	Platen Assembly	1	
4-8	PJDR71Z	Friction Roller	5	
4-9	PJUL111Z	Guide Support	1	
4-10	PJUG104Z	Paper Guide	1	
4-11	PJDS5212Z	Spring	3	
4-12	PJDS7034Z	Spring	2	
4-13	PJUR14Y	Roller Holder	2	
4-14	PJME104Z	Bail Arm (L)	1	
4-15	PJME105Z	Bail Arm (R)	1	
4-16	PJDS7022Y	Bail Spring (L)	1	
4-17	PJDS7023Y	Bail Spring (R)	1	
4-18	PJDF9123Z	Bail Shaft	1	
4-19	PJZR2P1191M	Bail Roller Kit	2	
4-20	PJDS7027Z	Bail Lever Spring	1	
4-21	PJUB73Z-3	Bail Lever	1	
4-22	PJZU1P1180M	Back Tension Sheet Assembly	1	
4-23	PJHR9165Y	Paper End Sensor Contact Lever	1	
4-24	PJJQ141Z	Line Feed Motor	1	
4-25	PJDG5228Z	Middle Gear	1	
4-26	PJZG2P1180M	Scissors Gear Assembly	1	
4-27	PJUB72Z-3	Head Gap Lever	1	
4-28	PJDG5218Z	Eccentric Cam	2	
4-29	PJUL83Y	Carriage Guide Plate	1	
4-30	PJSH1A28Z	Leaf Switch	3	
4-31	PJJS515Z	Connector with Cable (Home Switch)	1	
4-32	PJHR9166Z	Paper End Contact Lever	1	
4-33	PJDS7025Z	Spring	1	
4-34	PJDG0906Z	Pulley Frange	2	
4-35	PJDG9030Z	Drive Gear	1	
4-36	PJHG328Y	Mount Rubber	2	
4-37	PJJQ92Z	Carriage Motor	1	
4-38	PJUV71Z	Head Cable Cover	1	
4-39	PJZKP1123U	Carriage Motor Base Assembly	1	
4-40	PJDS5055Z	Bracket Spring	1	
4-41	PJZHP1180M	Idle Pulley Bracket Assembly	1	
4-42	PJDD4134Z	Idle Pulley	1	
4-43	PJMC90Z	Motor GND	1	
4-44	PJDF556Z	Carriage Shaft	1	
4-45	PJUS97Z	Shaft GND	1	
4-46	PJJS491Z	Connector with Cable (Bail Switch)	1	
4-47	PJDF9125Z	Friction Cam Shaft	1	
4-48	PJUB74Z-3	Paper Feed Selector	1	
4-49	PJJS506Z	Connector with Cable (Friction/Tractor Switch)	1	
4-50	XWG3F13	Washer	1	
4-51	PJHE6019Z	Washer	1	
4-52	XWG8A19WW	Washer	1	
4-53	XUC7FY	E-ring	1	
4-54	XUC4FY	E-ring	1	
4-55	XUC3FY	E-ring	2	
4-56	PJYC3+MC16	Screw 3x16mm	2	
4-57	XTW3+10F	Screw 3x10mm	3	
4-58	XTW3+8F	Screw 3x8mm	4	

Ref.No.	Parts No.	Parts Name and Description	Per Set	Remarks
4-59	XYN3+F8	Screw 3x8mm	1	
4-60	XYN3+F6	Screw 3x6mm	2	
4-61	XTW3+6L	Screw 3x6mm	1	
4-62	XTW3+U6L	Screw 3x6mm	1	
4-63	XTW26+10F	Screw 2.6x10mm	3	
4-64	XTB3+10J	Screw 2.6x8mm	3	
4-65	XTB3+8J	Screw 3x10mm	3	
4-66	XYN26+F8	Screw 2.6x8mm	2	
4-67	PJME5065Z	Screw	1	

9.5 Main Board



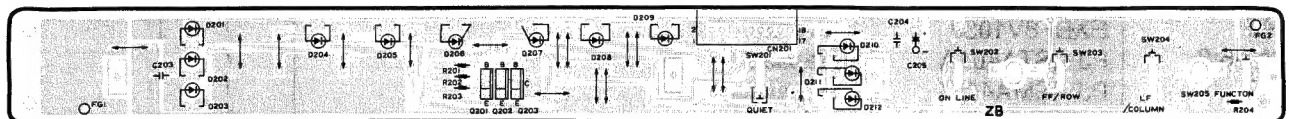
Ref.No.	Parts No.	Parts Name and Description			Per Set	Remarks
Integrated Circuits, Transistor and Diodes						
IC1	MN18806	IC			1	
IC2	MN51005Q	IC			1	
IC3	AN8081K	IC			1	
IC5	PJVITC51832S	IC			1	
IC7	PJWIP1123M	IC (ROM)			1	
IC8	PJVIHD7406P	IC			1	
IC9	PJVIM74LS14P	IC			1	
IC10	PJVIM24C01P	IC			1	
IC11	PJVIM74HC05P	IC			1	
IC12	PJVILM393P	IC			1	
IC13	PJVIMC1413P	IC			1	
D1-4	PJVDRL253	Diode			4	
D5,8-11,34-37	PJVD1N4003N	Diode			9	
D6	MA4100	Diode			1	
D7,38	PJVDEK09W	Diode			2	
D12,13	1SS178	Diode			2	
D17,18	PJVD05AZ47	Diode			2	
D19-22,24	PJVD1N4003N	Diode			5	
D23	PJVDERC91	Diode			1	
D25,26,39	1SS178	Diode			3	
D30	PJVD05AZ6.2X	Diode			1	
D44	PJVD05AZ43	Diode			1	
D45,46	PJVD1N4003N	Diode			2	
Q1	2SD2151P	Transistor			1	
Q2	2SA1533	Transistor			1	
Q3	2SC3939	Transistor			1	
Q4	2SC3311A	Transistor			1	
Q5,6,11	UN421	Transistor			3	
Q7-10	2SB1504	Transistor			4	
Q12,13,16-18	UN421	Transistor			4	
Q14,19,20	2SB1333	Transistor			3	
Q15	2SA1309	Transistor			1	
Q21	2SB1393	Transistor			1	
Resistors						
R1	ERD16FJ101	100	1/6W	Carbon	1	S
R2,9	ERQS2BJ470	47	1/4W	Metal	2	
R3	ERG1SJ101	100	1W	Metal	1	
R4	ERG2SJ392	3.9K	2W	Metal	1	
R5	ERD16FJ102	1K	1/6W	Carbon	1	S
R6	EROS2TKG1001	1K	1/4W	Metal	1	
R7	ERD16FJ223	22K	1/6W	Carbon	1	S
R8	ERD16FJ471	470	1/6W	Carbon	1	S
R10	ERD16FJ473	47K	1/6W	Carbon	1	S
R11	EROS2TKG3002	30K	1/4W	Metal	1	S
R14	ERD16FJ123	12K	1/6W	Carbon	1	S
R15,27,30	ERD16FJ332	3.3K	1/6W	Carbon	3	S

Ref.No.	Parts No.	Parts Name and Description			Per Set	Remarks
R17,18	ERD16FJ105	1M	1/6W	Carbon	2	S
R19,20	ERD16FJ331	330	1/6W	Carbon	2	S
R21,22	ERQS2BJ1ROT	1	1/4W	Metal	2	S
R23-26	ERD16FJ102	1K	1/6W	Carbon	4	S
R28,29,31,32	ERD16FJ682	6.8K	1/6W	Carbon	4	S
R34,36,37,39	ERD16FJ682	6.8K	1/6W	Carbon	4	S
R35,38	ERD16FJ332	3.3K	1/6W	Carbon	2	S
R40-42	ERD16FJ103	10K	1/6W	Carbon	3	S
R43,44	ERD16FJ473	47K	1/6W	Carbon	2	S
R45,47	ERD16FJ221	220	1/6W	Carbon	2	S
R48,157	ERD16FJ103	10K	1/6W	Carbon	2	S
R49-52,62-69	ERD16FJ102	1K	1/6W	Carbon	12	S
R54-60,78	ERD16FJ151	150	1/6W	Carbon	8	S
R75	ERD16FJ222	2.2K	1/6W	Carbon	1	S
R76,100,106	ERD16FJ103	10K	1/6W	Carbon	3	S
R77	ERD16FJ471	470	1/6W	Carbon	1	S
R79-86	ERD16FJ102	1K	1/6W	Carbon	8	S
R87	ERQS2BJ4R7	4.7	1/4W	Metal	1	
R88-95	ERD16FJ103	10K	1/6W	Carbon	8	S
R96	ERD16FJ152	1.5K	1/6W	Carbon	1	S
R97,98,154	ERD16FJ221	220	1/6W	Carbon	3	S
R99,158,159	ERD16FJ333	33K	1.6W	Carbon	3	S
R102-105	ERD16FJ272	2.7K	1/6W	Carbon	4	S
R107	ERD16FJ472	4.7K	1/6W	Carbon	1	S
R108,117	ERD16FJ332	3.3K	1/6W	Carbon	2	S
R109,113	ERD16FJ152	1.5K	1/6W	Carbon	2	S
R110,116	ERD16FJ224	220K	1/6W	Carbon	2	S
R111,114,115	ERD16FJ223	22K	1/6W	Carbon	3	S
R112	ERD16FJ182	1.8K	1/6W	Carbon	1	S
R120,121	ERD16FJ223	22K	1/6W	Carbon	2	S
R122,127-130	ERD16FJ332	3.3K	1/6W	Carbon	5	S
R123,124	ERD16FJ153	15K	1/6W	Carbon	2	S
R131-134	ERD16FJ222	2.2K	1/6W	Carbon	4	S
R136	ERD16FJ103	10K	1/6W	Carbon	1	S
R137,138	ERX1SJ1RO	1	1W	Metal	2	
R139	ERQS2BJ4R7T	4.7	1/4W	Metal	1	S
R140	ERD16FJ472	4.7K	1/6W	Carbon	1	S
R141,142	ERD16FJ105	1M	1/6W	Carbon	2	S
R150,156	ERD16FJ152	1.5K	1/6W	Carbon	2	S
R151	ERD16FJ332	3.3K	1/6W	Carbon	2	S
R153	ERD16FJ473	47K	1/6W	Carbon	1	S
R155	ERD16FJ680	68	1/6W	Carbon	1	S
R160	ERD16FJ221	220	1/6W	Carbon	1	

Ref.No.	Parts No.	Parts Name and Description			Per Set	Remarks
Capacitors						
C1	ECEA1CU101B	16V	100	Electrolytic	1	
C2	ECKR2H103ZU	500V	0.01	Ceramic	1	
C3	ECOS70P682C	70V	6800	Metal	1	
C4,12,13	ECKD1H103ZF	50V	0.01	Semi-Conductor	3	S
C5	ECET50S472	50V	4700	Electrolytic	1	
C6,23,47	ECFD1E104ZF	25V	0.1	Semi-Conductor	3	S
C7,11,14	ECEA1HK2R2B	50V	2.2	Electrolytic	3	
C8	ECQM1H152JV3	50V	1500P	Polyester	1	
C9	ECEA0JU221	6.3V	220	Electrolytic	1	
C10,15-19,26	ECKD1H102KB	50V	1000P	Ceramic	6	S
C27	ECKD1H103ZF	50V	0.01	Ceramic	1	S
C28,29,35	ECKD1H102KB	50V	1000P	Ceramic	3	S
C36,38,39	ECKD1H151KB	50V	150P	Ceramic	3	S
C37,40,53,54	ECKD1H102KB	50V	1000P	Ceramic	4	S
C44	ECEA0JU102B	6.3V	1000	Eselectrolytic	1	
C46,56-58	ECFD1H223ZF	50V	0.022	Semi-Conductor	4	S
C20,21,24	ECFD1H223ZF	50V	0.022	Semi-Conductor	3	S
C33,34,45,51	ECFD1H223ZF	50V	0.022	Semi-Conductor	4	S
C50	ECCT1H151JC	50V	220P	Ceramic	1	S
C52	ECCT1H271JC	50V	270P	Ceramic	1	S
Component Combinations						
RA1	EXBF6E103J	R-Array			1	
RA2,3	EXBF9E272J	R-Array			1	
RA4	EXBF5E472J	R-Array			1	
RA5	EXBF8V103J	R-Array			1	
QA1-6,8	PJVISTA401A	Transistor Array			7	
QA7	PJVISMA4031	Transistor Array			1	
CA1	EXFP4102ZW	C-Array			1	

Ref.No.	Parts No.	Parts Name and Description	Per Set	Remarks
Other Parts				
HS1	PJMY66Z	Heat Sink for Q1	1	
BZ1	EFB-RD22C41	Buzzer	1	
CN1	PJJP81Z	Connector, Power Transformer	1	
CN2	PJJP147Z	Connector, Rear / Bottom Paper End Sensor	1	
CN3	PJJP158Z	Connector, CSF Paper End Sensor	1	
CN4	PJJP157Z	Connector, Home Switch	1	
CN5	PJJP37Z	Connector, Friction / Tractor Switch	1	
CN6	PJJP168Z	Connector, Bail Switch	1	
CN7,8	PJJS397Z	Connector, Printhead	2	
CN9	PJJS460Z	Connector, Option	1	
CN10	PJJS29W	Connector, Centronics	1	
CN11	PJJP160Z	Connector, Paper Feed Motor	1	
CN12	PJJP40Z	Connector, Carriage Motor	1	
CN13	PJJS425Z	Connector, Control Panel	1	
F1	XBA2C31TBO	Fuse 3.15A, 250V	1	⚠
F2,3	XBAICPF50	IC Protector	2	
L1,3,5,6	PJLQ19Z	Coil	4	
L2	PJLQ12Z	Coil	1	
L4	PJLQ11Z	Coil	1	
PB1	PJWP1P1123U	Main Board Complete	1	
X1	PJVCST8MT	X'Tal	1	

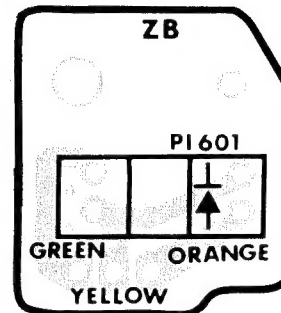
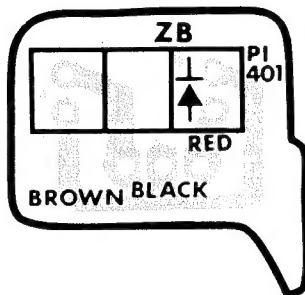
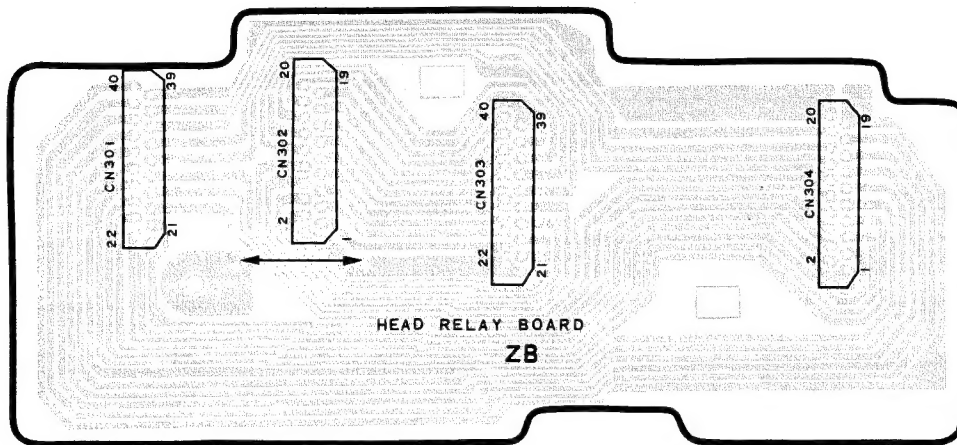
9.6 Control Panel



(Parts Side View)

Ref.No.	Parts No.	Parts Name and Description	Per Set	Remarks
C203,204	ECFD1H223ZF	0.022 50V Semi-Conductor	2	S
CN201	PJJS708Z	Connector	1	
D201-211	PJVDTLG208	Diode	11	
D212	PJVDTLR208	Diode	1	
R201-203	ERD16FJ151	150V 1/6W Carbon	3	S
R204	ERD16FJ332	3.3K 1/6w Carbon	1	S
Q201-203	UN421	Transistor	3	
SW201-205	EVQ-QS205K	Switch	5	
PB2	PJWP2P1123U	Control Board Complete	1	

9.7 Sensor and Head Relay Terminal



(Parts Side View)

Ref.No.	Parts No.	Parts Name and Description	Per Set	Remarks
CN301-304	PJJS397Z	Connector	4	
CN401	PJJS489Z	Connector	1	
CN601	PJJS490Z	Connector	1	
PI401	PJVSSX1041	Photo Interrupter	1	
PI601	PJSSX1041	Photo Interrupter	1	
1	PJUP401Z-c	Head Relay Terminal Board Bare PCB	1	
2	PJUP401Z-d	Rear/Bottom Paper End Sensor Board Bare PCB	1	
3	PJUP401Z-e	Friction Paper End Sensor Board Bare PCB	1	
Packing Materials				
P1	PJQX6160Z	Instruction Book (English)	1	
P2	PJPG844Z	CartonBox	1	
P3	PJPN303Y	Pad (L)	1	
P4	PJPN304Y	Pad (R)	1	
P5	PJPE201Z	Soft Sheet	1	
P6	PJQX6215Z	Instruction Book (French) [F]	1	
P6	PJQX6216Z	Instruction Book (Italian) [I]	1	
P6	PJQX6217Z	Instruction Book (Dutch) [O] [V]	1	
P6	PJQX6218Z	Instruction Book (Simplified French) [V]	1	
P6	PJQX6219Z	Instruction Book (Spanish) [SP]	1	

Technical Information

Printer

KX-P1123

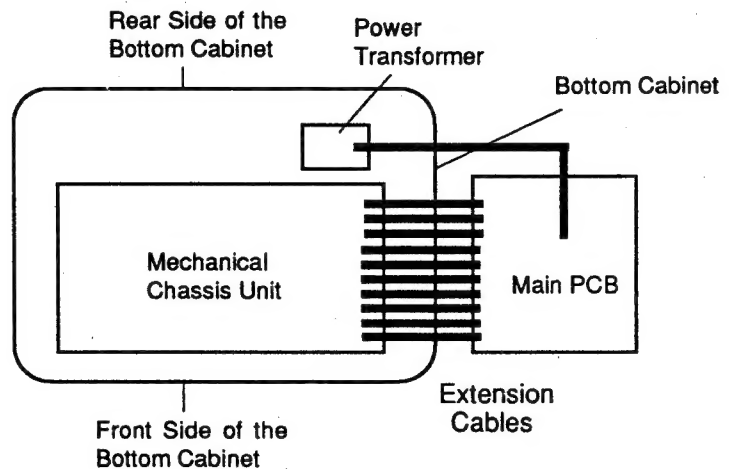
Purpose : To provide easy access of Main PCB during repair

Extension cables are available to provide easy access of the Main PCB during testing and trouble-shooting procedures. Use of these extensions will require the removal of the following parts from the printer :

Top Cover	Front Panel
Smoked Plastic Cover	Upper Cabinet

■ Attaching of the Extension Cables

- 1) Remove the Mechanical Chassis Unit from the Bottom Cabinet.
- 2) Remove the Main PCB . Place this board at the right outside of the Bottom Cabinet as shown in the Figure below.
- 3) Place the Mechanical Chassis Unit back to its original position in the Bottom Cabinet.
- 4) Attach the Extension Cables to the Mechanical Chassis Unit, Main PCB, Head Relay Terminal, Front Panel and Power Transformer.



■ Extension Cable Parts List

Ref. No.	Cable Number	Cable Name & Description		Per Unit	Remarks
EX1	PJWX1P1180M	Extension Cable	CN1, Power	1	
EX2	PJWX2P1180M	Extension Cable	CN5, F/T SW	1	
EX3	PJWX3P1180M	Extension Cable	CN6, Bail	1	
EX4	PJWX4P1180M	Extension Cable	CN4, Home	1	
EX5	PJWX5P1180M	Extension Cable	CN3, F PE	1	
EX6	PJWX6P1180M	Extension Cable	CN2, T PE	1	
EX7	PJWX7P1180M	Extension Cable	CN11, LF	1	
EX8	PJWX8P1180M	Extension Cable	CN12, CR	1	
EX9	PJJE236Z	Flat Cable	CN7, Head	1	
EX10	PJJE237Z	Flat Cable	CN8, Head	1	
EX11	PJJE238Z	Flat Cable	CN13, Panel	1	

Panasonic